SKEPTICAL INQUIRER

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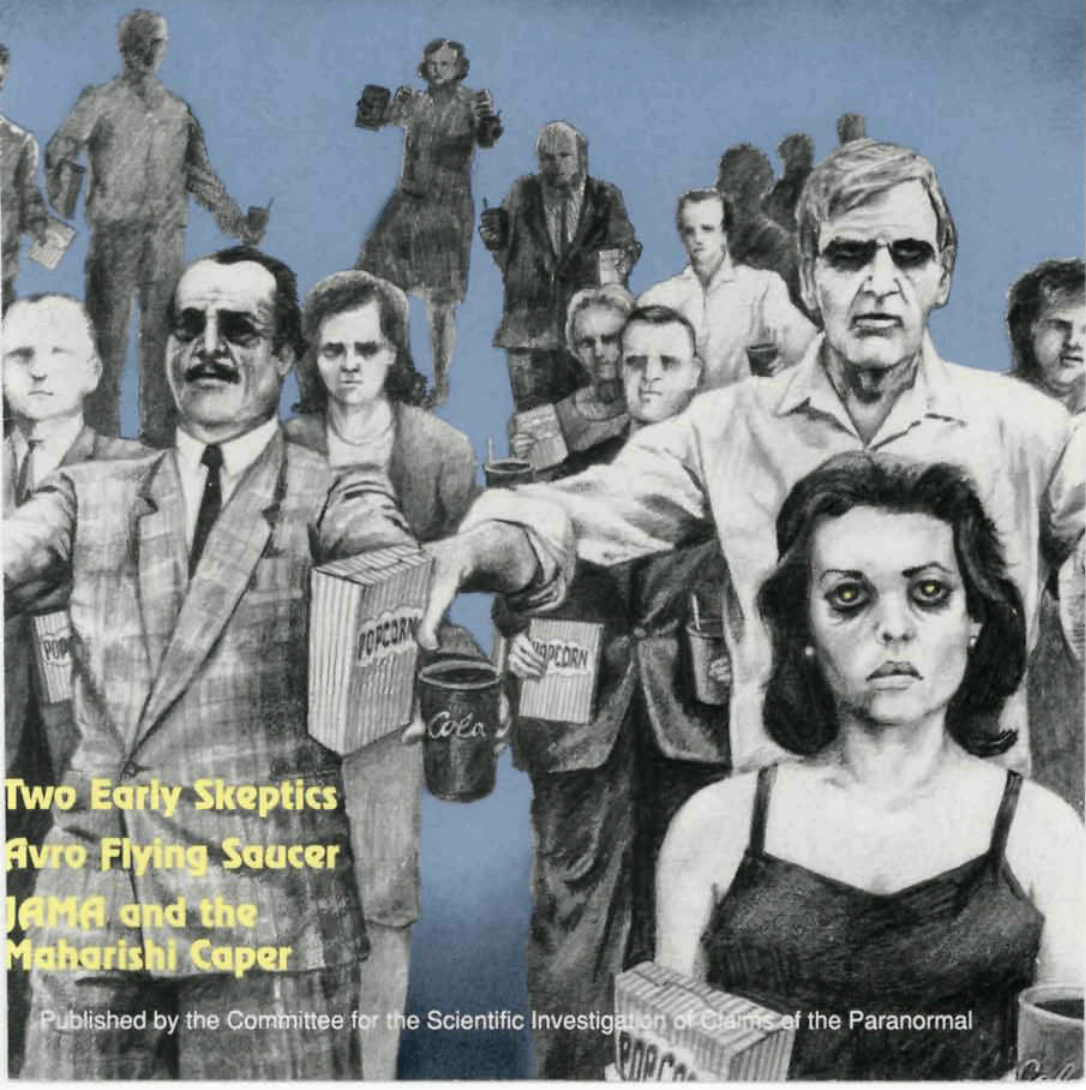
A Special Issue

Myths of Subliminal Persuasion



Two Early Skeptics

Avro Flying Saucer

JAMA and the Maharishi Caper

Published by the Committee for the Scientific Investigation of Claims of the Paranormal

THE SKEPTICAL INQUIRER (ISSN 0194-6730) is the official journal of the Committee for the Scientific Investigation of Claims of the Paranormal, an international organization.

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2:00 - 5:00 P.M.: GENDER ISSUES IN SCIENCE AND PSEUDOSCIENCE

Moderator: **James Alcock,** professor of psychology, Glendon College, York University, Toronto

Susan Blackmore, psychologist, University of Bristol, U.K.

Carol Tavris, psychologist, University of California, Los Angeles

Additional speaker to be announced.

5:00 - 8:00 P.M.: Dinner Break

8:00 P.M.: KEYNOTE ADDRESS

Richard Dawkins, professor of zoology, Oxford University, and author of *The Blind Watchmaker* and *The Selfish Gene*

Saturday, October 17

8:00 - 9:00 A.M.: Registration

9:00 A.M. - 12 NOON: FRAUD IN SCIENCE

Moderator: **Elie Shneour,** Director, Biosystems Research Institute

Speakers to be announced.

12 NOON - 2:00 P.M.: CSICOP Luncheon

Sergei Kapitza, editor of Russian edition of *Scientific American*; member Russian Academy of Sciences

Evry Schatzman, former president, French Physics Society; member French Academy of Science

2:00 - 5:00 P.M.: Two Concurrent Sessions

Session 1. CRASHED SAUCERS

Moderator: **Philip J. Klass,** leading investigator of UFO claims and former senior editor of *Aviation Week and Space Technology*

Robert Young, education director, Harrisburg Astronomical Society

James McGaha, Major, U.S. Air Force (ret.), Tucson, Arizona

Additional speaker to be announced.

Session 2. THE PARANORMAL IN CHINA

Moderator: **Paul Kurtz,** CSICOP Chairman and professor emeritus of philosophy at the State University of New York at Buffalo

Guo Zheng-yi, Shen Zhen-yu, Weng Shi-da, Dong Guang-bi, and **Zhong Hong-Lin,** members of the Chinese Association for Science and Technology

(Continued on next page.)

Saturday (continued)

6:00 - 7:00 P.M.: Reception (cash bar)

7:00 - 10:00 P.M.: Awards Banquet

Entertainment by **Steve Shaw,** mentalist, magician and "Project Alpha" alumnus

Sunday, October 18

9:00 A.M. - NOON: Conversation Session

Screening of CSICOP video.

This conference is hosted by the North Texas Skeptics, an independent, autonomous organization.

REGISTRATION FORM

Preregistration is advised. (Students 25 or under with I.D., $25.00. Registration fee does not include meals or accommodations.) Mail to:

1992 CSICOP Conference, P.O. Box 703, Buffalo, New York 14226

☐ **YES, I (we) plan to attend the 1992 CSICOP Conference in Dallas.**

☐ $125 registration for _____ person(s), includes Keynote Address. $ _____

☐ $15.00 Saturday Luncheon for _____ person(s) $ _____

☐ $25.00 Saturday Awards Banquet for _____ person(s) $ _____

☐ $10.00 nonregistrant ticket(s) to Keynote Address for _____ person(s) $ _____

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City _____ State _____ Zip _____

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☐ No, I will not be able to attend the conference, but please accept my contribution (tax-deductible) of $ _____ to help cover the costs of this and future CSICOP events.

Note: The CSICOP Hospitality Room will be open at 5:00 P.M. on Thursday, October 15 (cash bar 7:30 to 11:00 P.M.). This room will be available for the entire conference.

Accommodations: The Harvey Hotel, near the Dallas-Fort Worth Airport, Highway 114 at Esters Blvd., 4545 W. John Carpenter Freeway, Irving, TX 75063. Free parking. **Single $68.00, double $68.00** (plus 11% tax). (The Harvey will arrange shared doubles upon request.) These special rates will be available from October 13 through October 19. For reservations call 214-929-4500, FAX 214-929-0733. Benton's restaurant, Scoop's Diner, Cassidy's Lounge, and the Lobby Bar are on the premises, and the hotel will provide free transportation to Restaurant Row. Complimentary coffee will be available in the lobby for hotel guests.

Transportation: For special conference airline rates call CSICOP's travel agent, Judy Pensack, **Creative Destinations, 800-572-5440** or **FAX 407-830-5530,** who has arranged discounts. **Free transportation** to and from DFW Airport to the Harvey Hotel.

For more information, call or write to Mary Rose Hays at CSICOP, Box 703, Buffalo, New York 14226 / Telephone: 716-636-1425, FAX 716-1733.

Media representatives should contact Barry Karr: 716-636-1425.

News and Comment

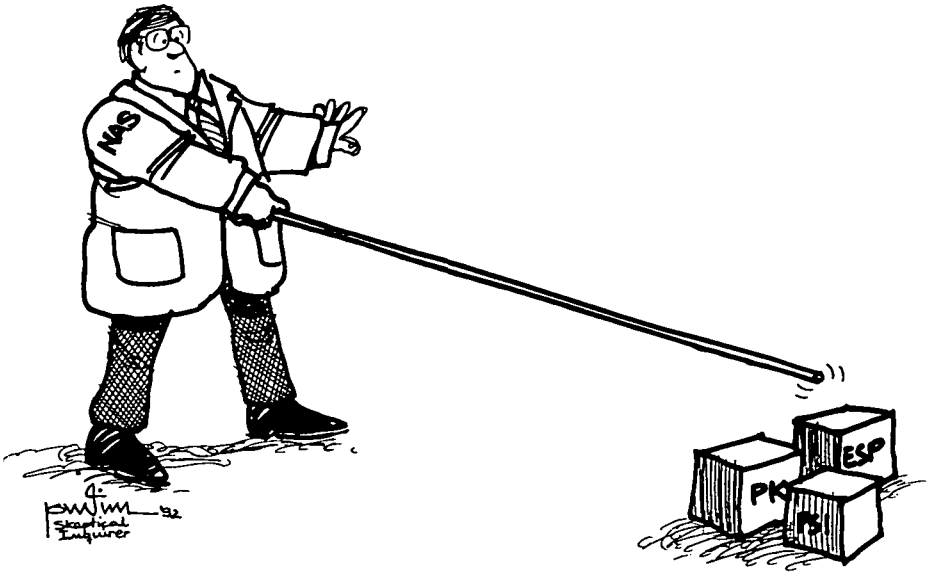
NAS Scientists Highly Skeptical About ESP and PK, Survey Reveals

An interesting survey of members of the National Academy of Sciences about their attitudes toward parapsychology has been published in the *Journal of the American Society for Psychical Research* (vol. 84, October 1991).

It shows that these elite American scientists are highly skeptical about the existence of extrasensory perception (ESP) and psychokinesis (PK). In fact, 77 percent either said such psi abilities do "not occur" or said they are "extremely skeptical" about them. An additional 19 percent voiced no opinion but were basically skeptical. Only 2 percent answered that they felt psi anomalies had been demonstrated, with 3 percent saying psi sometimes occurs.

The National Academy of Sciences is composed of more than 1,500 of the most distinguished scientists in the United States, elected to membership for significant and sustained contributions to scientific knowledge. Probably no group of scientists—other than U.S. Nobel Prize winners, of whom virtually all are Academy members—could be considered more eminent, and so their attitudes toward parapsychology are of considerable interest. They are also now of considerable concern to parapsychologists.

Parapsychologist Robert A. McConnell, of the Biological Sciences



Department of the University of Pittsburgh, carried out the poll. The motivating reason, he says, was his concern over the negative conclusions toward the evidence of parapsychology contained in the 1988 National Research Council (NRC) report *Enhancing Human Performance.* The NRC, the operating arm of the NAS, is congressionally chartered to carry out studies for branches of the federal government, and the NRC committee that examined parapsychology found "no scientific justification from research conducted over a period of 130 years for the existence of parapsychological phenomena." (See "Enhancing Human Performance: What About Parapsychology," *SI,* Fall 1988. The NRC committee's second report, on altering mental states, was published in September; see pp. 233-234 of this issue.)

Parapsychologists were deeply concerned about that conclusion and other negative evaluations in the report, and McConnell was among those who counterattacked most vociferously. He strongly complained to the president of the Academy and later circulated correspondence to 6,690 persons, including 1,441 members of the Academy, followed by a second round of correspondence, generally receiving very little response. (That correspondence is published in the appendices to his survey report.) He and others seem sincerely not to understand why the evidence they feel parapsychologists have put forth for psychic phenomena has not gained scientific acceptance. Part of the reason for the poll was to find out why.

In January 1990, McConnell sent a brief multiple-choice questionnaire on parapsychology to a sample of about one-third (491) of the 1,564 members of the NAS. McConnell says it went to nearly all NAS neurobiologists, anthropologists, psychologists, social and political scientists, and economists, and a randomly chosen 20 percent of the other NAS members.

McConnell introduced his survey letter with reference to what he terms the "uncompromising stand against parapsychology" of the earlier NRC report and then defined extrasensory perception and psychokinesis in this way:

> The hypothesis of parapsychology is that at least some humans can bypass their sensory and motor mechanisms and, by means of volition, can to some slight degree reach directly to space and time outside themselves to gather information or to exert a force. The gathering of information in this way is called "extrasensory perception" (ESP), and the exertion of a force is called "psychokinesis" (PK).

He asked three questions, beginning with, *"What is your opinion regarding the occurrence of ESP or PK?"* The other two questions asked respondents to give reasons for their skepticism and their attitudes toward encouraging further research in parapsychology. This time 239 of the recipients (49 percent) responded—a percentage that McConnell feels is high enough, with a few minor caveats, to be generally extrapolated to the NAS membership as a whole.

To the question about their belief in such psi abilities, 14 percent were certain that ESP and PK do not occur, and 63 percent were extremely skeptical. An additional 19 percent checked "I have no opinion to offer, but I am, of course, skeptical." Only 5 percent answered either that "unexplained anomalies . . . suggesting ESP and/or PK" had been demonstrated or that they believe psi "sometimes occurs."

It is interesting to compare these extremely low levels of belief by

TABLE 1

NAS Members' Opinions Regarding Parapsychology

Membership Groups (NAS Sections)	Response to Question 1: Belief in Psi (ESP and PK) Tally Count and Percent of All Replies				
	Does not occur	Extremely skeptical	No opinion	Anomalies demonstrated	Psi occurs
Physical Scientists (*N*=23)	3 (13%)	17 (74%)	3 (13%)	0 (0%)	0 (0%)
Chemical Scientists (*N*=22)	1 (5%)	19 (86%)	1 (5%)	0 (0%)	1 (5%)
Geological Scientists (*N*=11)	0 (0%)	8 (73%)	3 (27%)	0 (0%)	0 (0%)
Biochem. & Cellular (*N*=18)	1 (6%)	12 (67%)	5 (28%)	0 (0%)	0 (0%)
Neurobiologists (*N*=22)	6 (27%)	14 (64%)	1 (5%)	1 (5%)	0 (0%)
Organismic Biologists (*N*=23)	3 (13%)	12 (52%)	7 (30%)	1 (4%)	0 (0%)
Applied Physical (*N*=17)	5 (29%)	8 (47%)	3 (18%)	1 (6%)	0 (0%)
Medical Scientists (*N*=17)	4 (24%)	8 (47%)	3 (18%)	0 (0%)	2 (12%)
Anthropologists (*N*=23)	3 (13%)	12 (52%)	7 (30%)	0 (0%)	1 (4%)
Psychologists (*N*=27)	3 (11%)	19 (70%)	4 (15%)	0 (0%)	1 (4%)
Social and Political (*N*=21)	2 (10%)	12 (57%)	6 (29%)	1 (5%)	0 (0%)
Economists (*N*=15)	2 (13%)	9 (60%)	3 (20%)	0 (0%)	1 (7%)
Gross Totals (*N*=239)	33 (14%)	150 (63%)	46 (19%)	4 (2%)	6 (3%)
Corrected Totals*	(14%)	(63%)	(20%)	(2%)	(2%)

*Corrected totals are adjusted for sampling fraction.

Source: McConnell and Clark, "National Academy of Sciences' Opinion on Parapsychology," *J. Am. Soc. of Psychical Research*, 85:363-365, October 1991.

eminent scientists with the levels found among adult Americans last year by the Gallup poll (*SI*, Winter 1991, p. 138). Gallup found that 49 percent of the general population believes in ESP, 36 percent in telepathy, 26 percent in clairvoyance, and 17 percent in psychokinesis.

McConnell's questionnaires were coded to show to which of the disciplinary sections of the NAS each respondent belonged. (See Table 1.) These breakdowns show that for some groups the rate of rejection of the psi hypothesis (answering, "ESP and PK do not occur" or that they are "extremely skeptical") is extremely high: neurobiologists, 91 percent; chemists, 91 percent; physical scientists, 87 percent; psychologists, 81 percent. The remaining groups fell in the 77 percent to 65 percent range (anthropologists and organismic biologists both had this "lowest" level of skepticism).

The 77 percent of respondents (183 persons) who answered the first question in the two most skeptical categories were scored on the reasons for their skepticism. (See Table 2.) They were allowed to check more than one answer. Seventy-one percent of these checked "The phenomena have not been explained and do not fit into known science." Five percent checked "I have personally done experiments and obtained only chance results." Eleven percent checked "I have personally studied some of the supposedly best experiments and found

The Committee for the Scientific Investigation
of Claims of the Paranormal
announces the

1992
CSICOP Conference

at the

Harvey Hotel in

Dallas, Texas

Friday, Saturday, and Sunday
October 16, 17, and 18, 1992

FAIRNESS, FRAUD AND FEMINISM: CULTURE CONFRONTS SCIENCE

Keynote Address
(Friday at 8:00 P.M.)

Richard Dawkins

distinguished professor of zoology at Oxford University,
author of *The Blind Watchmaker* and *The Selfish Gene*

(Tentative Program)

Friday, October 16

7:30 - 9:00 A.M.: Registration

9:00 - 9:15 A.M.: Opening Remarks — **Paul Kurtz,** CSICOP Chairman

9:15 A.M. - 12 NOON: MULTICULTURAL APPROACHES TO SCIENCE: THE GOOD, THE BAD, AND THE UGLY

Moderator: **Eugenie Scott,** Executive Director, National Center for Science Education

Bernard Ortiz de Montellano, professor of anthropology, Wayne State University

Diana Marinez, professor of biochemistry, Michigan State University

Joseph Dunbar, professor of physiology, Wayne State University

12 NOON - 2:00 P.M.: Lunch Break

TABLE 2

NAS Members' Opinions Regarding Parapsychology

	Response to Question 2: Reasons for Disbelief in Psi (ESP and PK) Tally Count and Percent of All Disbelieving Replies[1]				
	Psi does not "fit"	Personal experiments	Study of journals	Evaluations by others	Other reasons
Gross Totals (*N*=183)	130 (71%)	9 (5%)	20 (11%)	88 (48%)	20 (11%)
Corrected Totals[2]	(73%)	(5%)	(10%)	(45%)	(10%)

[1]Scored only for replies choosing the first or second answer to Question 1. For each group, multiple responses to Question 2 total more than 100%.
[2]Corrected totals are adjusted for sampling fraction.

Source: McConnell and Clark, "National Academy of Sciences' Opinion on Parapsychology," *J. Am. Soc. of Psychical Research*, 85:363-365, October 1991.

them unconvincing." (Seven of these 20 persons were psychologists, but in his comments, McConnell laments that few of the NAS members who checked this answer provided supporting detail about journals, papers, etc., as he had asked, leaving him suspecting that few are really familiar with the parapsychological literature.) Forty-eight percent gave as a reason, "I know of, and accept, negative evaluations published by professional scientists." Eleven percent checked "other reasons" (such as poor reproducibility, questionable statistics, fraud, etc.).

As for their attitudes toward parapsychological research (see Table 3), of the 235 responding 25 percent said it should be "discouraged," 63 percent said it should be "allowed but not encouraged," and 10 percent said it should be "encouraged." Neurobiologists and psychologists were the most negative in these attitudes; anthropologists, the least.

All in all, the results seem most noteworthy for the extremely high levels of skepticism toward the existence of ESP and PK held by members of the National Academy of Sciences. Given the much greater levels of belief

TABLE 3

NAS Members' Opinions Regarding Parapsychology

	Response to Question 3: Attitude Toward Parapsychological Research Tally Count and Percent of All Replies		
	Should be discouraged	Should be allowed but not encouraged	Should be encouraged
Gross Totals (*N*=235)	60 (25%)	150 (63%)	25 (10%)
Corrected Totals[1]	(25%)	(65%)	(9%)

[1]Corrected totals are adjusted for sampling fraction.

Source: McConnell and Clark, "National Academy of Sciences' Opinion on Parapsychology," *J. Am. Soc. of Psychical Research*, 85:363-365, October 1991.

documented among nonscientists, they reinforce the view that there is a tremendous gap in perception about the validity of psi phenomena between the elite end of the scientific community, on the one hand, and the general public on the other.

The results would seem to provide little comfort to parapsychologists. McConnell tries to salvage some satisfaction by pointing out that 1 in 25 NAS members accepts psi phenomena as having a nontrivial basis in reality (leaving 24 out of 25 who do not), 1 in 5 reserves judgment, and 3 out of 4 do not oppose continuation of research. Indeed, McConnell, a strong defender of parapsychology and a harsh critic of its critics, has considerable criticism for the attitudes he documents. He interprets the results as an indication that most members of the NAS "have rejected the evidence for psi phenomena without having examined it" and "base their opinions almost entirely (*a*) upon the fact that the purported phenomena are not explainable by the known principles of science and (*b*) upon the adverse opinions of 'other scientists.' "

Whether that is a fair judgment or not, his survey has provided some much-needed hard data about the beliefs and attitudes of eminent scientists toward claims of psychic phenomena for comparison with those of the wider public.

—*Kendrick Frazier*

Altering Mental States: NRC Evaluates Claims

The following is from an opening statement by ***Robert A. Bjork****, professor of psychology, University of California, Los Angeles, and chair, Committee on Techniques for the Enhancement of Human Performance, National Research Council, given at a news conference at the National Academy of Sciences, in Washington, September 24, 1991, presenting conclusions of the Committee's second report,* In the Mind's Eye.*

What is the best way to train troops for battle and other kinds of tasks? This is but one of several questions our committee has been investigating at the request of the U.S. Army Research Institute. Over a period of two years, we have examined the relevant scientific literature, commissioned several review papers from outside specialists, made site visits to military and nonmilitary settings, and invited consultants and advocates to speak to the committee. Our study builds upon an earlier National Research Council report, also sponsored by the Institute, that was released three years ago [*Enhancing Human Performance;* see *SI*, Fall 1988]. This time, we again examined this issue of "human technology," of how people can be helped to improve their performance in an era of great technological advances. In the current study, we considered three specific areas: training, altering mental states, and preparing to perform. . . .

In the second area of study I mentioned—altered mental states—we reach some interesting conclusions about whether such states can lead to better performance.

Many people are trying to enhance performance with subliminal self-help tapes. Americans bought an estimated

$50 million of these tapes in 1987, and sales probably have increased since then. There are tapes purporting to help listeners stop smoking, improve their golf games, or become nicer people. But can these tapes really alter behavior and attitudes? We find such claims unwarranted from both a theoretical and empirical standpoint. Research on some tapes shows that their embedded messages are below the level of subliminal perception. Furthermore, even when there are detectable subliminal messages on the tapes, there is no evidence that these messages can change complex human behaviors, such as smoking or building self-esteem. [See articles in this issue.—ED.]

Another way of altering a mental state is through meditation. We find no support for any special properties of meditation as a technique to reduce stress or enhance performance. Ordinary rest and relaxation are as effective. People who meditate regularly may pursue more peaceful lifestyles, but it is important to distinguish between the technique and lifestyle changes when determining why stress was reduced or other benefits occurred.

We are more positive about psychological techniques for managing pain. Research suggests that people can be taught ways of handling physical pain without drugs. Relaxation techniques, providing information about what to expect, and enhancing a person's sense of control all help people to deal with pain more effectively.

We also considered people's ability to detect deception. Many people claim to have great skill at detecting lies. When asked to do this in random trials, however, they often fail. Nonetheless, liars often do exhibit body movements and changes in their tone of voice that reveal their emotional state and, by inference, their intentions. Learning these cues can help someone spot a liar, although the lie-detection skills learned in dealing with Americans may not be valid with people of other cultures.

In the third area of the study—preparing to perform—we have favorable findings to report about some methods that people use to prepare for sports and other physical activities. Before Mike Powell made his historic long jump a few weeks ago, for instance, he stood on the end of the track and visualized himself in motion. We conclude that this kind of mental rehearsal really can improve performance. However, mental practice is less important than physical practice, and it is more useful if done in conjunction with the actual activity. Imagining yourself swinging a golf club like Jack Nicklaus does is less helpful than hitting a bucket of balls.

Another way to help performance is through pre-performance rituals that athletes use, like bouncing a tennis ball before serving. These rituals contribute to physiological changes—such as reduced heart rate—that are associated with better performance.

In summary, there is reason to be skeptical of some of the performance-enhancement techniques being promoted to the American public. But there also is an opportunity to learn from a growing body of research and to take advantage of some techniques that do appear effective. Good intentions and dramatic claims are not enough. We should learn from scientific evidence and apply what has been shown to really work.

---

*Daniel Druckman and Robert A. Bjork, editors, *In the Mind's Eye: Enhancing Human Performance*, Committee on Techniques for the Enhancement of Human Performance, National Research Council (National Academy Press, Washington, D.C., 1991).

Astrology Disclaimer Now in 42 Newspapers

When we last reported the status of the CSICOP campaign to encourage newspapers to carry disclaimers with their astrology columns (*SI*, Fall 1990), the number doing so stood at 33. Since that time there have been a number of additions to the list as well as a couple of deletions. Currently we are aware of 42 newspapers that carry some sort of disclaimer.

CSICOP has done two mailings to every newspaper in the United States concerning the disclaimer request—the first in 1984, and the second in 1988. Since that time, additions to the list have been largely the result of contacts with their local papers by SKEPTICAL INQUIRER readers.

Many times a single letter can make the difference. SKEPTICAL INQUIRER reader Eugene Friedman sent a letter to the *Los Angeles Times* asking if they would consider a disclaimer. He received a response from John Dreyfuss, assistant to the associate editor, stating:

> I discussed with both the Associate Editor and the View Editor the prospect of using a disclaimer similar to those suggested in the article you sent us from the SKEPTICAL INQUIRER
>
> We are giving the idea careful consideration and want to take some time to weigh the questions involved.
>
> We appreciate both your bringing the idea of using a disclaimer to our attention and your interest in the *Times*.

Apparently the weight of the questions involved came out correctly, because shortly thereafter the following notice began to appear with the *Los Angeles Times* astrology column: "The astrological forecast should be read for entertainment only."

According to Friedman: "Since the horoscope column appears on the comic pages, near 'Calvin and Hobbes,' it will be easy for me to notice should the disclaimer disappear, and I will be happy to keep track of it." He also said, "I don't know how long ago they began to run the disclaimer [it began in May 1991], but it's another victory for skeptics."

However, not all papers that run disclaimers do so because of the actions of readers. Jeannine R. Schaub, associate publisher of the *Boone (Iowa) News-Republican*, decided to add a disclaimer because of the articles she read in the SKEPTICAL INQUIRER. When she contacted us, she said:

> As daily newspapers go, we're small potatoes. But we do have our standards.
>
> With the Astro-graph we get from NEA, we run this disclaimer: "The following feature is offered purely for entertainment purposes."
>
> Add us to your list of those newspapers who wish we'd never run that first astrology column.

To the best of our knowledge these are the papers that now carry disclaimers with their astrology columns:

Montgomery Advertiser (Ala.)
Alabama Journal (Montgomery, Ala.)
Tuscaloosa News (Ala.)
Sun City Daily News (Ariz.)
Tucson Citizen (Ariz.)
Tucson Daily Star (Ariz.)
Los Angeles Times (Calif.)
Wilmington News-Journal (Del.)
St. Petersburg Times (Fla.)
Columbus Ledger-Enquirer (Ga.)
Honolulu Advertiser (Hawaii)
Ka Leo O Hawaii (Honolulu, Hawaii)

Charleston Times-Courier (Ill.)
Mattoon Gazette (Ill.)
Indianapolis Star (Ind.)
Boone News-Republican (Iowa)
Hiawatha Daily World (Kans.)
Baton Rouge Advocate (La.)
Baton Rouge State Times (La.)
Adrian Telegram (Mich.)
Battle Creek Enquirer (Mich.)
Hillsdale Daily News (Mich.)
Marquette Mining Journal (Mich.)
Tupelo Daily Journal (Mich.)
Rochester Post-Bulletin (Mich.)
Kansas City Star (Mo.)
St. Louis Post-Dispatch (Mo.)
Manchester Union-Leader (N.H.)
Asbury Park Press (N.J.)
Albuquerque Tribune (N.Mex.)
Auburn Citizen (N.Y.)
Hillsboro Press-Gazette (Ohio)
Ravenna Record-Courier (Ohio)
Altoona Mirror (Pa.)
Indiana Gazette (Pa.)
Pittsburgh Post-Gazette (Pa.)
Memphis Commercial-Appeal (Tenn.)
Oak-Ridger (Oak Ridge, Tenn.)
Austin American-Statesman (Tex.)
Orange Leader (Tex.)
Sherman Democrat (Tex.)
Milwaukee Journal (Wis.)

—*Barry Karr*

Duplicating the Miracle of the Liquefying Blood

Every few months since 1389 at a cathedral in Naples, a vial of what is said to be the blood of the martyred Saint Januarius, or San Genaro (who died about A.D. 305), is ceremonially handled by religious leaders and, while observers watch, the contents turn from a clotted state to a liquid. This is treated as a religious miracle. The event draws thousands of people to the cathedral, and in recent times millions more witness it on television.

The phenomenon seems genuine and has generally been considered unexplained.

Now Luigi Garlaschelli of the Department of Organic Chemistry at the University of Pavia, Italy, and two colleagues from Milan, Franco Ramaccini and Sergio Della Sala (of San Paolo Hospital), have proposed a natural explanation for the event—and have even duplicated the process.

They suggest the phenomenon is an example of thixotropy—the property of certain gels to liquefy when stirred or vibrated and to solidify again when left to stand. Shaking or even a slight disturbance makes a thixotropic substance more fluid, even changing it from solid to liquid.

In a brief report in the British journal *Nature* (353:507, October 10, 1991), the authors describe how they reproduced liquefaction of samples resembling the blood relics that they prepared using substances available in the fourteenth century. They made a solution of ferric chloride (found on active volcanoes like Vesuvius), then slowly added calcium carbonate (chalk). After some evaporation was allowed, they added a small amount of sodium chloride (common salt) and got a dark, brownish thixotropic fluid that set in about one hour to a gel.

They report that the gel can be easily liquefied by gentle shaking, and the liquefaction/solidification cycle is highly repeatable.

They note that in the typical blood-liquefaction ceremony, the glass-walled relic case is repeatedly inverted. "Thus a successful performance of the

rite does not involve any conscious cheating. Indeed, inadvertent liquefaction events have been observed many times over the centuries during handling for repairs to the case that contains the vial."

The authors are continuing their experiments to form bloodlike thixotropic mixtures with other common substances and have had some success.

"The chemical nature of the Naples relic can be established only by opening the vial, but a complete analysis is forbidden by the Catholic church. Our replication of the phenomenon seems to render the sacrifice unnecessary."

Church leaders were moderate in their reaction. A spokesman for the church, the Reverend Peter Verity, was quoted as saying: "These phenomena have never been a part of Catholic teaching. People have always been free to believe or not believe in them as they wish."

The *Times* of London quoted Mervyn Alexander, a Roman Catholic bishop in Clifton, who pointed out that there was no suggestion of fakery: "Belief in the authenticity of such things is a personal judgment and some people feel moved to accept them."

The London newspaper also reported that chemist Garlaschelli first became interested in the Naples ceremony after reading some correspondence about it in the magazine *CICAP*, published by the Italian equivalent of the Committee for the Scientific Investigation of Claims of the Paranormal.

—*Kendrick Frazier*

Orgonomists Meet in Princeton, Promote Reichian Legacy

The American College of Orgonomy, whose members are followers of Wilhelm Reich, held their annual meeting October 5 and 6, 1991, at the Hyatt Regency Hotel in Princeton, New Jersey. The College, headed by Richard Blasband, is one of three factions of "orthodox" Reichians laying claim to the legacy of the controversial psychoanalyst-turned-biophysicist. None of these three factions is to be confused with the "neo-Reichian" followers of either Alexander Lowen or Charles Kelley.

The College's members include psychiatrists, physical scientists, and individuals from a variety of other professions (not unlike a typical skeptics organization). But while they are ostensibly committed to scientific methodology, the Reichians accept notions that are usually associated

with New Age mysticism: flying saucers, clairvoyance, the power of prayer over plants, the laying on of hands, mind over matter, and spontaneous generation. The orgonomists, however, hold that these phenomena have all been demonstrated through scientific experiments, not merely revealed by way of mystical experiences.

There were seven presentations on Sunday, following the annual dinner the previous night. Three were by persons in the field of psychology; their talks fell well within the parameters of accepted, conventional knowledge in the discipline. But the four papers by the physical scientists were another matter.

Bernard Grad of Montreal spoke of the effects of Reichian orgone accumulators on cancerous mice. According to his findings, mice treated with these Reichian devices were significantly less likely to die from cancer than the controls were. His statistics showed that this was because they were dying faster from other causes, but Grad did not follow this up. Part of his talk concerned an alleged psychic healer, Oskar Estebany, an elderly man who had once served as an officer in the Hungarian army, whose "healing hands" were supposed to have beneficial effects on plants, animals, and people. Water contained in bottles that had been held in Estebany's "healing hands" for half an hour displayed unique characteristics when analyzed through a spectroscope. Again, the significance of the phenomenon was left unexplained.

Roger Nelson, a colleague of Robert Jahn at the Princeton Engineering Anomalies Research (PEAR) Laboratory, which specializes in parapsychological studies, gave an account of remote-viewing experiments that appeared to validate the phenomenon of clairvoyance. The PEAR lab is also conducting experiments to see if human consciousness can influence a random-number generator. Some of PEAR's researchers find the results to be absolutely convincing. It was freely admitted that this line of research originated with Targ and Puthoff at SRI International in California, but no one seemed to be aware of the many questions that have been raised about that research.

Steven Dunlap, a microbiologist for a large chemical corporation, showed a video that purported to feature living microbes developing in a sterile medium. The experiment involved sterilizing beakers of dirt and then watching them through a microscope. It would have been easy enough to replicate, and it is curious that no one other than orgonomists has ever done so.

Richard Blasband gave the day's final talk on an experiment of his with orgone accumulators that showed slight differences between the temperature inside a small accumulator and that inside a control box made of plastic. Blasband said the temperature inside his accumulator (made of layers of wood and metal) both rose and fell faster than it did in the control. It was not clear what this proved, other than the already known fact that metal and plastic do not conduct heat at the same rate.

Considering the extraordinary nature of the claims made by the presenters, it was curious that very little time was allowed for questions from the audience of about 50. Blasband invariably intervened to cut off discussion after two or three questions. Only at the end of his own presentation did he permit more than a minute or two for discussion.

During the meeting nothing was said about UFOs, which the Reichians put great stock in, and there were no papers on weather control ("cloud-

busting"), another favorite Reichian preoccupation. The one paper on politics had to be canceled because the presenter was ill, although the far-right doctrines Reich identified with in his later years were very much in evidence. The word on the overthrow of Communism in Eastern Europe was that it was a Communist plot.

The conference presented a curious picture all told. The orgonomists claim to have invalidated the paradigms of virtually all other schools in every field of scientific endeavor—physics, biology, cosmology, meteorology, psychology, and even the social sciences. Yet no new theories have come out of the College since Reich's death in 1957. All of the experiments were aimed at proving the things that Reich argued for during his lifetime. And the phenomena described by the orgonomists usually predated the age of science by centuries: Roman emperors, for example, were also supposed to possess "healing hands"; clairvoyance and telekinesis were widely believed in during the nineteenth century; and even Reich's "orgone energy" was anticipated by Anton Mesmer's doctrine of animal magnetism.

The College of Orgonomy may have mellowed a bit since the recent departure of some of its most fanatical adherents, led by Courtney Baker. And the psychotherapists in the group, in particular, have a more open-minded approach to theory and research than their colleagues in the physical sciences. But it is obvious that orgonomists will have a difficult time being taken seriously, whatever the merits of their work in the field of depth psychology, if they continue to peddle mystical notions in scientific dress.

—*Richard Morrock*

Psychics' Predictions (Surprise!) Fizzle for 1991

Saddam Hussein was not killed in an accidental nuclear explosion, nor was he brought to trial. A massive earthquake did not dump California into the ocean. Pope John Paul II was not charged by a crazed camel, and Tom Cruise did not lose his hair. These were just a few of the many predictions that had been made for 1991 by famous "psychics," but they were dead wrong, as chronicled by the Bay Area Skeptics.

At the end of each year, many well-known psychics issue predictions for the year to come. Twelve months later, they issue another set of predictions, conveniently forgetting those made the year before. Each year, however, the Bay Area Skeptics dig up the predictions made the year before, to the embarrassment of those who made them.

Many of the psychics' predictions are so vague that it is impossible to say if they came true or not. Many other "predictions" involve things that happen every year, or else are not difficult to guess, such as hurricanes along the Gulf Coast, marital strife for Charles and Diana, or severe winter storms. Many supposed "predictions" simply state that ongoing events and trends will continue, such as economic uncertainty and conflict in the Middle East.

Other supposed "predictions" are not really predictions at all, but are actually disclosures of little-known

events that are already under way, such as movie productions, business ventures, and developing scandals. Because questionable claims of amazing predictions frequently are made in the wake of major news stories, the Bay Area Skeptics only evaluates predictions that were published or broadcast before the events they claimed to foretell.

Denver "psychic" Lou Wright predicted that a magnitude 7.0 earthquake would devastate the Los Angeles area in September (*The Globe*, December 25, 1990). She also predicted that an air disaster would kill hundreds of vacationers on their way to Hawaii in March (*National Enquirer*, January 1, 1991).

"Psychic" Tony Leggett predicted that Vice-President Quayle would temporarily stand in for the president when Bush is stricken with heart problems, that a former president would die in the fall, and that an assassination attempt on Soviet President Gorbachev would be foiled by a courageous American tourist (*The Examiner*, December 25, 1990).

The famous Washington, D.C., "psychic" Jeane Dixon, who supposedly has a "gift of prophecy," saw the Reverend Jimmy Swaggart's ministry being "saved" by a last-minute donation this year, rather than being destroyed by another scandal involving a prostitute. She also predicted that Prince Charles and Princess Diana would announce their separation. (*The Star*, December 25, 1990). In April 1991, Jeane Dixon issued her predictions for the aftermath of the Gulf War. While this did contain the correct prediction of the release of the Western hostages in Lebanon, she also predicted that Saddam Hussein would either be assassinated or be put on trial for war crimes in a Moslem court. She also saw terrorist attacks being made against the British Royal Family and Monaco's Prince Rainier and predicted that the world would be stunned as "the old order" in China, Korea, and Japan suddenly fell apart like the Berlin wall. No major changes occurred in any of those governments during 1991 (*The Star*, April 16, 1991).

Another Southern California "psychic," Clarisa Bernhardt, who is claimed to make "uncanny earthquake predictions," foresaw that the much-heralded earthquake that was supposed to hit Missouri in December 1990 would actually strike in the fall of 1991. She also predicted that Imelda Marcos and Tammy Faye Bakker would team up to open a nationwide chain of clothing and shoe boutiques (*National Enquirer*, January 1, 1991).

It is important to note that no psychic predicted the genuinely surprising stories of 1991: the military coup in the Kremlin that was defeated almost bloodlessly by supporters of democracy, followed just a few months later by the complete dissolution of the Soviet Union; Saddam Hussein deliberately causing one of the world's largest oil spills, then torching Kuwait's oil fields; the most destructive wildfire in California history devastating the Oakland and Berkeley hills; and a highly publicized rape trial of a member of the Kennedy family.

Based on the continuing failure of psychics to make accurate predictions over the years, the Bay Area Skeptics urged everyone—including the media—to exercise some healthy skepticism when psychics and other purveyors of the paranormal make extraordinary claims or predictions. "Anyone who swallows the psychics' claims year after year without checking the record is setting a bad example for students and for the public."

—Yves Barbero, Robert Steiner, and Robert Sheaffer, of the Bay Area Skeptics

Big Foot Dead Or Alive?

Before former CSICOP executive director Mark Plummer returned to the wilds of Australia, he visited this Big Foot Cemetery in northern Illinois, which has been in existence since 1840. As he asks, "What further proof is necessary?"

Legal Loss for Scientology in Norway

The Norwegian Church Scientology lost a civil court case in Oslo recently. The cult was ordered to return U.S. $20,000, which Marion Lem had paid for courses and materials.

Lem was a Scientologist for a few months in 1985. Later she decided to quit and consulted a lawyer in order to sue the cult. In 1988, however, Lem died of cancer. Her son, Steinar Lem, decided to continue with the lawsuit on behalf of his late mother.

The city court of Oslo stated in its decision that there is a significant commercial and competitive aspect of Scientology in its effort to achieve economic expansion.

Judge Vigdis Berg also wrote that it is "morally improper" to attach people to an organization and to have them pay money in the way it was done in this case.

Sixty-year-old Marion Lem had never borrowed money until she became a Scientologist. A divorced and lonely woman, she had earlier in her life received psychological treatment and was looking for someone to help her with her problems.

In Scientology she took the basic communication course as well as the so-called purification rundown. In addition, she received 137 hours of auditing. Altogether Lem spent about U.S. $20,000, of which about $14,000 was financed by a bank loan.

The court found that it had been proved that Lem was physically and psychologically exhausted after having taken the "purification rundown" course, Judge Berg wrote in her ruling.

Judge Berg found that Lem's payment of money to the Church of

Scientology had taken place after improper pressure, almost coercion from the cult.

The Church of Scientology cult was ordered to repay the $20,000 to Lem's son in addition to covering his legal expenses.

During the past two years, the Norwegian Church of Scientology has settled a number of repayment claims with ex-Scientologists out of court. However, the cult consistently has failed to fulfill these agreements.

The Marion Lem decision was the first legal ruling of its type in Norway. SOS Norway, a support group for ex-Scientologists, has described the decision as a major victory in its fight against Scientology.

The Norwegian Church of Scientology said in a press release that the cult will appeal the decision. It stated in its press release that the anti-religious group SOS Norway has used this court case to "promote gossips and to try to hurt a religion which has enabled millions of people to have a better life."

—*John Einar Sandvand*

John Sandvand is a journalist in Oslo, Norway.

☐ *For the Record*

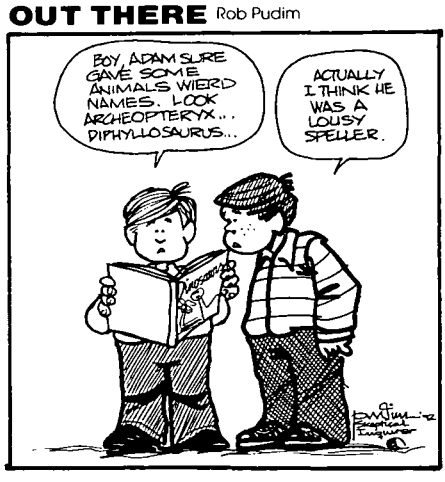
In the list of previous recipients of CSICOP's In Praise of Reason Award, on page 16 of the Fall 1991 issue, we inadvertently omitted the name of Antony Flew and ascribed a wrong year to Sidney Hook's award. British philosopher Antony Flew received the 1985 award at the CSICOP meeting in London. American philosopher Sidney Hook received the 1984 award.

* * *

The article "Lucien and Alexander: Debunking in the Classical Style" (Fall 1991) was reprinted with permission from the Spring 1991 *National Capital Area Skeptical Eye*, copyright 1991 National Capital Area Skeptics.

* * *

In Susan Blackmore's article "Near-Death Experiences: In or Out of the Body" in our Fall 1991 issue, two references, to articles by R. L. Morris et al. and C. T. Tart, incorrectly cited the *Journal of the Society for Psychical Research* instead of the *Journal of the American Society for Psychical Research.* The error occurred in the production process.


OUT THERE Rob Pudim
BOY, ADAM SURE GAVE SOME ANIMALS WIERD NAMES. LOOK ARCHEOPTERYX... DIPHYLLOSAURUS...
ACTUALLY I THINK HE WAS A LOUSY SPELLER.

CSICOP LEGAL DEFENSE FOUNDATION

Help Us Defend Skepticism Against Harassing Suits

In the Winter 1992 issue of the *Skeptical Inquirer* we outlined the difficulties that the Committee for the Scientific Investigation of Claims of the Paranormal is experiencing because of harassing lawsuits filed against skeptics.

We feel confident that these suits will eventually be dismissed. Still, we suspect that the lawsuits were brought for reasons other than the redress of alleged grievances.

For what do these suits mean? They mean that the pro-paranormalists think they have finally found a way to strike below the belt of scientists and skeptics. For years they have been unable to prove their claims of miraculous abilities. They've grown tired of hearing our challenges. Now they have turned to intimidation by lawsuit in an effort to silence their only persistent critics.

It doesn't necessarily matter if the plaintiff wins or loses the suit. Their purpose is to waste their opponents' resources and to intimidate and silence them—in effect, depriving individuals or organizations of their First Amendment rights.

We are by no means a wealthy organization, but we are not prepared to surrender our rights. *We have vowed to fight back.* To do so, we need your support. CSICOP has established the CSICOP Legal Defense Foundation. Its funds will be used to help pay the costs of existing lawsuits and any that may arise in the future, and to countersue when appropriate.

Don't allow the claim-mongers to destroy CSICOP (and the values of science and reason it steadfastly represents) through unjust and frivolous legal proceedings. Support the CSICOP Legal Defense Foundation today. It's the best way to blunt this frightening new weapon of the apostles of nonsense.

— —

Yes, I want to help defend the rights of skeptics. Enclosed is my tax-deductible contribution of: $ _____

(Please make check payable to the **CSICOP Legal Defense Foundation**)

Charge my ☐ **Visa** ☐ **MasterCard** ☐ **Check enclosed**

#_____ Exp. _____

Signature _____

Credit-card contributors may call toll-free: **1-800-634-1610**

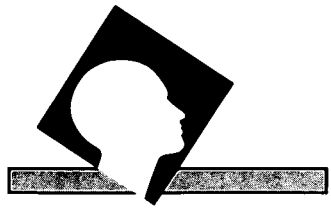
Name _____

Address _____

City _____ State _____ Zip _____

Mail to: **CSICOP Legal Defense Foundation**
Box 703, Buffalo, NY 14226

Notes of a Fringe-Watcher



MARTIN GARDNER

The Sad Story of Professor Haldane

We all know how intense religious beliefs can prevent intelligent people from accepting well-confirmed scientific theories. The church officials who persecuted Galileo provide the classic instance. There were no good reasons to doubt that the earth went around the sun or that there were mountains on the moon, but Roman scientists would not even look through Galileo's telescopes.

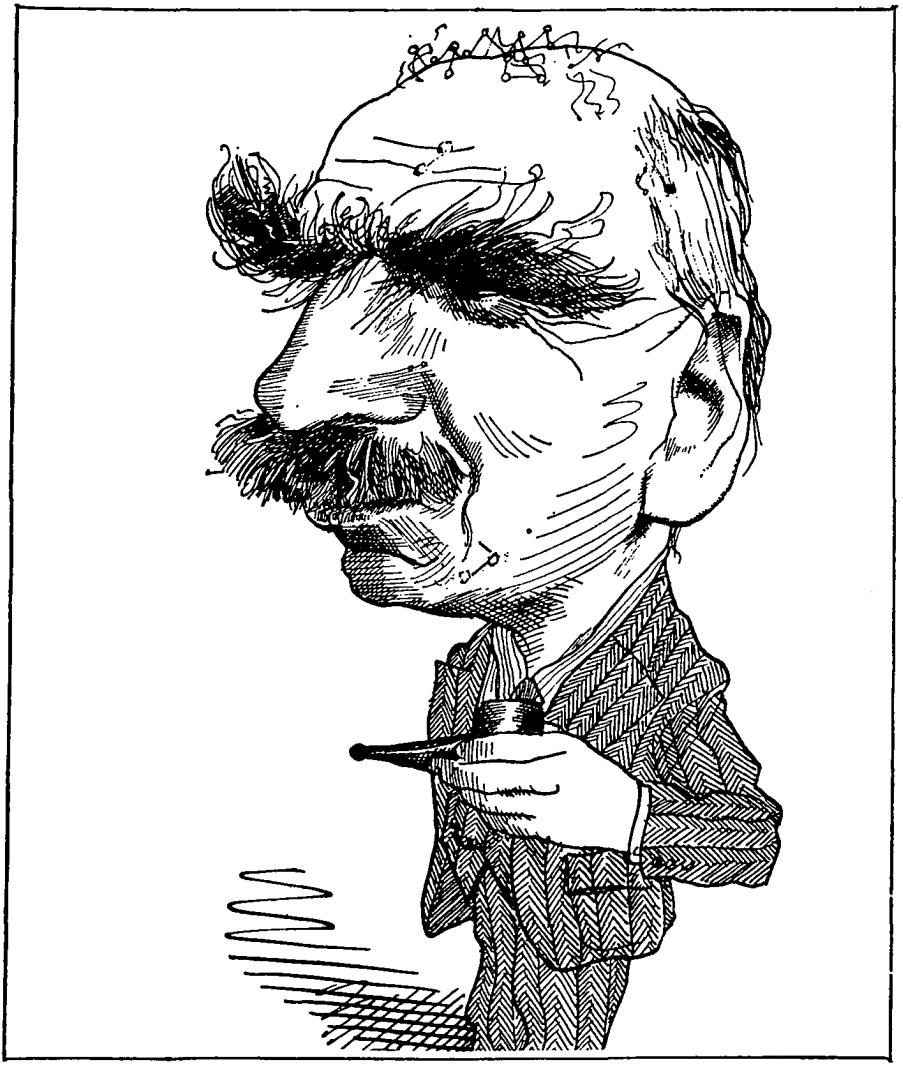
After Darwin, when evidence for evolution became as overwhelming as evidence for Copernican astronomy, strong belief in the historical accuracy of Genesis made it impossible for most conservative Christians to accept evolution. Even today, millions of fundamentalists commit the sin of willful ignorance by refusing to learn elementary geology and biology.

A vast literature covers ways in which religious convictions can distort thinking about science. Much less attention has been paid to how political ideologies can have similar influence. The two outstanding instances of all time are furnished by the ideologies of Nazism and Communism. During Hitler's reign of terror, German anthropology became a pseudoscience. Under Stalin, Marxist ideology distorted almost every science—even Einstein's relativity theory was attacked, not as Jewish science (as it was in Germany), but as "bourgeois idealism." In both countries it finally became obvious that disregarding relativity would be fatal to physics, especially in efforts to construct an atom bomb whose energy is measured by Einstein's famous formula.

In Russia, the major example of how a science can be crippled by political dogma was the abandonment of modern genetics for the crackpot Lamarckian views of plant-breeder Trofim D. Lysenko. Genetics in the Soviet Union is still struggling to recover from Stalin's merciless purging of his top biologists.

Did any respected Western biologist defend Lysenko? Yes, and though almost beyong belief, it was England's most admired geneticist, J. B. S. Haldane. There is no sadder example of how political dogmas can corrupt the mind of a distinguished scientist.

John Burdon Sanderson Haldane was a tall, tweedy, bald, bearlike man, with shaggy eyebrows, blue eyes, and a clipped mustache. He was born at Oxford in 1892, the son of a Scottish physiologist. His sister, Naomi Mitchison, became an admired novelist. JBS, as he was known, took his degree in



Drawing by David Levine. Reprinted with permission from *The New York Review of Books*. Copyright © 1968 Nyrev, Inc.

classics at Oxford. After fighting valiantly in World War I, he became an instructor in biochemistry at Cambridge.

Cambridge expelled him in 1925 when he was named correspondent in a messy divorce suit involving Charlotte Franken. After various notables, including Bertrand Russell and G. K. Chesterton, came to his defense, the ouster was rescinded. He and Charlotte married. After a year at the University of California, JBS became a professor at London University.

Haldane's immense contributions to genetics and evolutionary theory brought him many medals and honorary degrees. In 1937 France declared him a chevalier in the Legion of Honor. His dozens of books made him England's most widely read popularizer of science. "On Being the Right

Size," from his collection *Possible Worlds*, became his most reprinted essay. "My own suspicion is that the universe is not only queerer than we suppose, but queerer than we *can* suppose"—a sentence at the close of that book's title essay—became his most quoted remark.

In the mid-thirties Haldane discovered Karl Marx, and in 1942 he joined the Communist Party. For the next seven years he was chairman of the editorial board of London's *Daily Worker*. He wrote hundreds of articles, mostly about science, for that publication and for New York's *Daily Worker*. His political quips were so outrageous that he became one of England's comic eccentrics. What would JBS say next? Lenin, he solemnly declared, had cured his constipation. "I had it for about fifteen years until I read Lenin and other writers, who showed me what was wrong with our society and how to cure it. Since then I have needed no magnesia."

Charlotte was as dedicated to Stalin as her husband, although her disenchantment preceded his. In Paris, where the Party sent her during the Spanish Civil War, she fell in love with Arnold Reid, an American communist who was an editor of *New Masses*. Reid died in action in the war, having enlisted in the Lincoln Brigade. After leaving the Party, Charlotte became bitter about how Reid had been exploited.

For years Charlotte wanted to divorce Haldane, but as she tells it in her autobiography *Truth Will Out*, the Party refused to allow it. She was told: "The Party would not for one instant tolerate a divorce between two comrades whose partnership, in addition to the usefulness of their individual services, was of immense propaganda value to it." Charlotte finally obtained her divorce in 1945.

It was obvious to all biologists outside the USSR and its influence that Lysenko was a classic example of a sincere but hopelessly ignorant crank. "Lysenko's writings . . . are the merest drivel," said H. J. Muller, a Nobel prize-winner for his work in genetics. S. C. Hartland, another top geneticist, called Lysenko "blazingly ignorant of the elementary principles of plant physiology and genetics." Talking to him, said Hartland, was like discussing the differential calculus with a man who did not know how to multiply. Not only did Lysenko totally reject Mendelian genetics; he did not even believe that genes existed!

But Stalin, who knew nothing about science, admired Lysenko. In 1948, at a Moscow meeting of the Lenin Academy of Agricultural Sciences, Lysenko made a now-famous speech (Stalin helped write it) in which he announced that the Party had approved his work. When he ended by shouting "Glory to the great friend and protagonist of science, our leader and teacher, Comrade Stalin!" everyone obediently stood up and cheered.

Honor upon honor was heaped on Lysenko. He was given the Order of Lenin and made a vice-president of the Supreme Soviet. All over Russia laboratories were closed. Biologists who had disagreed openly with Lysenko lost their jobs. Many were sent to die in labor camps.

In the fall of 1948, when the Lysenko controversy was at its height, the BBC invited four distinguished biologists to debate Lysenkoism. Haldane was one of them, and the only one to defend Lysenko. His speech was a masterpiece of tap-dancing evasion and obfuscation. John Langdon-Davies, in his witty little book *Russia Puts the Clock Back* (1949), devotes a chapter to Haldane's shameful fence-sitting. It is from that chapter that I take what follows.

"I disagree with a lot of Lysenko's theories," JBS began, "but I agree with him on some fundamental points." One of Lysenko's startling claims was that he had altered the hereditary nature of wheat so it would withstand severe winter frosts. "This is a very revolutionary discovery if true," said Haldane. "Naturally I cannot form any serious opinion of this claim until I have seen a full account." Repeatedly he spoke of withholding judgment until he had read a translation of all 500 pages of a verbatim report by the Academy. However, summaries had been published earlier that made clear that existing genetic laboratories throughout the Soviet Union were to be abolished, and all scientists fired who favored what the report called the "pseudoscience" of Mendelian genetics. When the translation of all 500 pages finally appeared, Haldane remained silent.

"I find it very hard to believe," Haldane said in a BBC speech, "that the Soviet Government would back him [Lysenko] were he false." We may not like the Soviet Union, Haldane continued, "but after their achievements in the war we really cannot say that they are idle theorists." If the claim of "vernalizing" wheat is valid, he went on, "we shall have to listen seriously to what Lysenko has to say about heredity." Earlier experiments had already demolished Lysenko's vernalization theory, but Haldane was careful not to bring them up. Soon it was apparent even in Russia that efforts to vernalize wheat were a total failure.

Haldane could not believe that the laboratories of eminent Soviet biologists were being dismantled. "If, as I am told, Dr. Dubinin's laboratory in Moscow has been closed down, I am very sorry to hear it." Earlier that year the Academy of Sciences had announced that Dubinin's laboratory was to be "abolished as unscientific and useless." All Haldane could say was that if true he was sorry! That London has no courses in plant breeding, he said, is a serious matter "which we might well put right before we start telling Moscow what it ought to do."

In this speech Haldane seemed not to know, as all biologists outside of Russia knew, that Vavilov, the Soviet Union's greatest biologist, had been exiled to Siberia and accused of being an American spy. "You have been told," Haldane said, "that Vavilov died in prison." JBS had heard differently. He "appears to have died in Magadan in the Arctic in 1942 while breeding frost-resistant plants." Either Haldane did not know or would not say that Magadan was a notorious slave-labor camp. "It has been hinted," he said, "that the Soviet Academy bowed to political dictation" when it put its imprimatur on Lysenko's theories. "It is also possible that they bowed to facts."

So unshakable was Haldane's Stalinist faith, and so obedient was he to Party discipline, that he could not see, or was unable to say, that Lysenko was a fanatical Savonarola as scientifically illiterate as Comrade Stalin. In an essay "J.B.S.," in *Pluto's Republic*, Peter Medawar recalls conversations in which Haldane insisted that Beria, whom Stalin executed, was in the pay of Americans. He told Medawar that the Czech political leaders hanged by the Russians "got the punishment they deserved." At no time did Haldane condemn Stalin's great purges, which sent millions of innocent people to their deaths.

Eventually the evil nature of Stalinism partially soaked through Haldane's skull. He left the Party furtively, sometime in the late forties, without explaining why. Fifteen years later he said it was because Stalin had

Haldane as a Hindu, with his caste mark.

"interfered" with science. However, he continued until 1950 to write for the U.S. *Daily Worker*. Seven years later he resigned from University College, London, giving as his reasons the continued presence of American troops in England.

Haldane never called Lysenko a crank. In an obituary he had written for himself, Haldane said, "I am often asked what I think of Lysenko. In my opinion, Lysenko is a very fine biologist and some of his ideas are right." Some also are wrong, he added, and it was unfortunate that Stalin gave him powers to suppress valuable work by others. To the end, JBS remained a convinced Marxist and a friend of the Soviet Union.

Haldane and his second wife, Helen Spurway, a research assistant, moved to India in 1957, where they established a laboratory in Calcutta. "One of my reasons for settling in India," he said, "was to avoid wearing socks." He became an Indian citizen and a stricter vegetarian, adopted Indian garb, and occasionally fasted, like Gandhi, to protest one thing or another. In 1964, at his home in Bhubaneswar, aged 72, he died of cancer.

Shortly before dying, when he did not know his cancer was incurable, he wrote a long poem for the *New Statesman* that was widely reprinted, praised, and condemned as frivolous. It was titled "Cancer's a Funny Thing," a sentence taken from a poem by W. H. Auden. It began:

> I wish I had the voice of Homer
> To sing of rectal carcinoma,
> Which kills a lot more chaps, in fact,
> Than were bumped off when Troy
> was sacked.

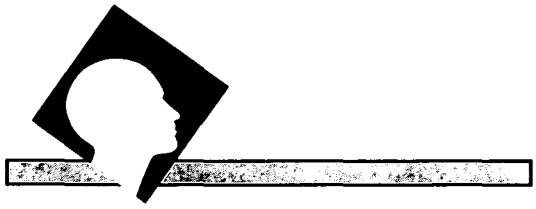
Near the end came this couplet:

> I know that cancer often kills,
> But so do cars and sleeping pills;

To which JBS might have added, had he been less politically blind:

> Not to mention, now we know,
> The millions killed by Uncle Joe. ■

Psychic Vibrations



Crashologists and Conspiracy-ologists

ROBERT SHEAFFER

Despite a dearth of exciting new cases, the Science of UFOlogy marches forward endlessly rehashing the old ones. Now a third book on the Roswell, New Mexico, "saucer crash" of 1947 is in the works, this one by Stanton T. Friedman, who calls himself "the flying saucer physicist," and Don Berliner. The first such book, *The Roswell Incident* (1980), by Charles Berlitz and William L. Moore, suggests that lightning struck a saucer flying near Roswell, causing debris to fall on the Brazel ranch. The crippled saucer flew on another 150 miles westward, crashing on the Plains of San Augustin, where the bodies of dead saucer aliens were later recovered. A second book, *UFO Crash at Roswell* (1991), by Kevin Randle and Don Schmitt, claims that four alien bodies were recovered, but at a site less than three miles from where the debris was found, still on the Brazel ranch.

Now Friedman and Berliner have written a book that will be published this year claiming that not one but *two* saucers crashed in New Mexico in 1947—one on the Brazel ranch (which might account for the four ET bodies Randle and Schmitt write about) and one on the Plains of San Augustin, where the government recovered three more alien bodies, plus one survivor! Randle and Schmitt, who are in the Center for UFO Studies (CUFOS) camp, dispute this, charging that a diary places the late Barney Barnett, claimed by Moore and Friedman as a witness to the San Augustin crash, hundreds of miles away on that day. Friedman, who is in the Mutual UFO Network (MUFON) camp, counter-charges that the work of Randle and Schmitt is "fatally flawed by pettiness, by selective choice of data, by false reasoning and by serious errors of omission and commission." Friedman relies heavily on the testimony of 49-year-old Gerald Anderson, who claims that 44 years earlier, when he was five, he and some now-deceased relatives stumbled upon three dead UFOnauts, and one still alive, at the San Augustin crash site. Unfortunately, Anderson told absolutely no one about this remarkable event, not even his wife, until he recently saw the incident dramatized on the television show "Unsolved Mysteries." But Friedman has great confidence in his witness, boasting that Anderson passed a polygraph test.

* * *

The recent "Phenomicon" conference in Atlanta brought some noted UFOl-

ogists together with some leading conspiracy-ologists to share some of their weirdest fantasies. Bill Cooper, who offers workshops in the "UFO coverup, the Secret Government, the Illuminati plan for a World Dictatorship, . . . etc.," explained that the story of "saucer aliens" is probably a myth promoted by the conspirators to create an "external threat" so we'll accept the imposition of a world dictatorship under the United Nations. However, the saucer technology *is* real, he insists, derived from saucers developed secretly by the Nazis and captured by the Allied nations at the close of World War II. Within two years, Cooper insists, the Bill of Rights will be suspended, and U.S. national sovereignty will be lost to a sinister New World Order. So if Cooper's apocalyptic prediction hasn't come to pass by November 3, 1993, we'll know his alarms are groundless.

While waiting to see if the conspiracy really does take over, we can drive out to "Area 51," made famous by Cooper, John Lear, and, most recently, the sensationalist Fox TV program of October 18, 1991, "Sightings: The UFO Report," to watch saucers that are supposedly routinely flown by government pilots. Cooper gave directions for those who want to check out Area 51 for themselves: from Las Vegas, drive north on Route 93 to Route 375 West, heading toward Tonopah (my map calls that Route 25). Go over the Hancock Summit, then take the first and only dirt road on the left, which takes you in toward the Nellis Air Force Base. According to Cooper, entire busloads of people have gone there and have seen, and photographed, saucers being flown by our government. Upon closer questioning, it seems that these saucers are generally seen only after dark. Since Tonopah-area people used to go out near this same area to try to catch a glimpse of nighttime training flights of then-secret F-117A Stealth fighters flying out of their base (active until 1992), built on the northern part of the Tonopah Test Range, one wonders if at least some of the "UFO" sightings may be of Stealths. Others, reported as "lights in the sky," may be just stars, animated by scintillation and enthusiasm. But I could be wrong, so you might want to check this out for yourself.

As for the conspiracy-ologists, they worried most about the Skull and Bones Society, which, while masquerading as a prestigious fraternity at Yale University, is apparently plotting to take over the entire planet. But Donald Ware, MUFON's Eastern Regional Director, saw the conspiracy unfolding differently. Approximately six million Americans have been abducted aboard UFOs, says Ware, whether they know it or not. The government conspires to use movies and television shows like "Star Trek" to prepare the public for the inevitable shock of learning about the aliens. These creatures, who probably hail from Zeta Reticuli are abducting and sexually molesting humans to genetically engineer a hybrid species.

Some notable departures: Whitley Strieber, author of *Communion*, *Transformation*, *The Wolfen*, and other works of imaginative fiction, announces he has closed down his *Communion Letter* magazine, after about two years of publication. He states, by way of explanation, that "the so-called 'UFOlogists' are probably the cruelest, nastiest, and craziest people I have ever encountered." Betty Hill, whose claimed 1961 "UFO abduction" created the precedent for the veritable onslaught of alien molestations now under way, announces that she too is retiring from the UFO field, because "too many people with flaky ideas, fantasies, and imaginations" are mak-

ing UFO reports. The MJ-12 Papers and Ed Walters's Gulf Breeze UFO photos have now been branded as hoaxes by CUFOS's editor Jerome Clark. (MUFON's establishment still stands strongly behind Walters.) Richard Gotlib, a Toronto psychotherapist who specializes in counseling supposed UFO abductees, laments that business has fallen off sharply in recent months, "despite a significant play in the media locally." And James Moseley, editor of *Saucer Smear* newsletter, reports that he has been terminated by MUFON as State Section Director for Monroe County, Florida, because during his five-year tenure, there was "zero growth in membership" (Moseley still remains the only MUFON member in Monroe County) and "zero sighting reports." Moseley has been informed that he is now Assistant State Section Director of a two-county area. ■

MARTIN GARDNER AND STEVE ALLEN CHAIR CSICOP/Center for Inquiry CAMPAIGN

Martin Gardner

Steve Allen

Science commentator Martin Gardner and author-humorist Steve Allen have been named co-chairs of the Center for Inquiry Capital Fund Drive. They will lead an expanding fund-raising effort, now under way. Its aim is not only to raise the funds required to complete Phase II of CSICOP's headquarters, but also to create an Endowment Fund whose income can be used in part to defray operating and maintenance costs of the new headquarters in perpetuity and to enrich all our programs.

Martin Gardner, the author of numerous books, wrote the long-running "Mathematical Games" column in *Scientific American* for many years and is a longtime contributor to *SI*.

Steve Allen is an author, humorist, musician, and television personality who created public television's *Meeting of Minds* series. His recent book *Dumbth: And 81 Ways to Make Americans Smarter* focused on America's crisis in critical thinking.

THE NEED FOR PHASE II

In 1991, CSICOP and the SKEPTICAL INQUIRER moved many of its offices and production facilities to a new 5,700-square-foot building near the State University of New York at Buffalo/Amherst campus. By conducting this Phase I project in cooperation with the Council for Democratic and Secular Humanism (CODESH), publisher of *Free Inquiry* magazine, and thanks to the generosity of our readers, CSICOP was able to pay almost all of its share of the costs.

Phase I was never designed to house back-issue storage, our mail center, and audio-visual facilities—most of which remains seven miles away in a decaying urban neighborhood. Moreover, our new headquarters has space for only the most recent literature in CSICOP's library collection. Finally, it provides no room for our increasing number of meetings and seminars.

Completing the 25,000-square-foot Phase II will consolidate all our Buffalo-area operations at one site—and provide permanent space for CSICOP's much-needed research library, seminar-meeting rooms, and additional office space. In addition, there will be room for expansion as CSICOP continues to grow.

It's Up to You

Your contribution at this time will help us to maintain our momentum as we accumulate funds for the design and construction of Phase II. Donors of $1,000 or more will be listed in a special commemorative album. Names of donors of $5,000 or more will be inscribed on a bronze plaque. A seminar room in the Phase II building will be named after anyone giving $25,000 or more, and a wing of the building will be named for anyone giving $100,000 or more. Gifts may be paid through three-year pledges payable quarterly, or with stocks or bonds.

Please make your contribution today. Make checks payable to CSICOP and mail to the CSICOP/Center for Inquiry Capital Fund Drive, Box 703, Buffalo, New York 14226-0703. Inquiries regarding substantial gifts, phased pledges, or bequests may be made in confidence to Paul Kurtz at the same address.

— —

Committee for the Scientific Investigation of Claims of the Paranormal
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SPECIAL REPORT

The Maharishi Caper: *JAMA* Hoodwinked (But Just for a While)

ANDREW SKOLNICK

From time to time, even the most prestigious science journals publish erroneous or fraudulent data, unjustified conclusions, and sometimes balderdash. Balderdash was the right word when the *Journal of the American Medical Association (JAMA)* published the article "Maharishi Ayur-Veda: Modern Insights Into Ancient Medicine" in its May 22-29, 1991, issue. Discovering that they had been deceived by the article's authors, the editors published a correction in the August 14 issue, which was followed on October 2 by a six-page exposé on the people who had hoodwinked them.

JAMA published a six-page exposé on the people who had hoodwinked them.

By reporting its mistake in this lengthy report and drawing the media's attention to it with a news release, *JAMA* made itself an easy target, even drawing some friendly fire from *Physician's Weekly* and *Science*. As the person who discovered *JAMA*'s error and wrote the exposé, I also think the journal deserves some praise.

The Maharishi Ayur-Veda article was ostensibly about the traditional healing system of India known as Ayurveda. It was published in *JAMA*'s international health theme issue as a "Letter from New Delhi" outside the journal's "main well" for scientific papers. The authors—Deepak Chopra, M.D., president of the American Association of Ayurvedic Medicine, Lancaster, Massachusetts; Hari M. Sharma, M.D., professor of pathology at Ohio State University College of Medicine, Columbus; and Brihaspati Dev Triguna, an Ayurvedic practitioner in New Delhi, India—represented themselves as disin-

terested authorities and had signed a statement that they were not affiliated with any organization that could profit by the publication of their article. (*JAMA*'s conflict-of-interest policy requires authors of accepted manuscripts to declare all such connections.)

Subsequent investigation showed they were intimately involved with the complex network of organizations that promote and sell the products and services about which they wrote. They misrepresented Maharishi Ayur-Veda as India's ancient system of healing, rather than what it is, a trademark line of "alternative health" products and services marketed since 1985 by the Maharishi Mahesh Yogi, the Hindu swami who founded the Transcendental Meditation (TM) movement.

Maharishi Mahesh Yogi began his rise to fame and great fortune in the 1960s when the Beatles rock group briefly joined his following of worshipers. Today the guru rules an empire estimated to be worth billions of dollars and has many thousands of devoted followers, some of whom are prominent in science, medicine, education, and the news, information, and and entertainment media. The TM movement is considered a religious cult by a number of authorities. According to longtime watchers of the movement, Maharishi Ayur-Veda is the latest of the Maharishi's schemes to boost the declining numbers of people taking TM courses through which he recruits new members. The movement also stands to reap millions of dollars through the sale of its herbal remedies, oils, teas, aromas, healing gems, Hindu horoscopes, books, tapes, and numerous services that carry the Maharishi's name.

Copies Already in the Mail

I first saw the Maharishi Ayur-Veda article four days prior to the publication date, when hundreds of thousands of copies were already in the mail. At the time, I didn't know anything about Maharishi's medical claims, but I was aware that the TM movement widely uses deception to promote its $3,000 courses in TM-Sidhi or "yogic flying." TM promoters claim that, by mastering this technique, people can develop the ability to walk through walls, make themselves invisible, develop the "strength of an elephant," reverse the aging process, and fly through the air without the benefit of machines.

In addition, TM promoters claim that by yogic flying in large groups they can prevent bad weather, traffic fatalities, and even war. Former members of the movement say that the practice of TM-Sidhi involves repeating a series of Hindu mantras during meditation followed by several minutes of hopping up and down in the cross-legged "lotus" position. Adherents claim that they are not hopping but levitating and that they have hundreds of scientific studies to prove it.

I called Stephen Barrett, M.D., and William Jarvis, Ph.D., of the National Council Against Health Fraud and asked what information they had about Maharishi Ayur-Veda. What they told me made it clear that *JAMA* had been duped. After poring through the promotional TM materials they sent and talking with several former TMers, I reported my findings to George Lundberg, M.D., editor of *JAMA*, and suggested that we expose the authors and the movement they represent in a *JAMA* Medical News & Perspectives story. I was given the assignment, which took me almost three months to complete. The resulting article, "Maharishi Ayur-Veda: Guru's Marketing Scheme Promises World Eternal 'Perfect Health,' " was published on October 2.

Unusually long for Medical News & Perspectives, the exposé on the marketing of Maharishi Ayur-Veda documents a widespread pattern of misinformation, deception, and manipulation of lay and scientific news media. This campaign appears to be aimed at earning at least the look of scientific respectability for the TM movement, while boosting the sales of their extremely lucrative products and services. (One example is the herbal elixir known as Maharishi Amrish Kalash, which costs $1,000 for a year's supply.)

Chopra says everyone should take the cure/prevent-all twice a day. Chopra claims the Ayur-Veda health care is far more cost-effective than conventional medicine. However, the annual cost of just this one Maharishi Ayur-Veda product is equivalent to 40 percent of the average per-capita expenditure on all health care in the United States in 1989. The other products and services he recommends just to maintain health would cost thousands of dollars more each year. However, this total pales compared with the cost of Maharishi Ayur-Veda treatments in case of actual illness, which can exceed $10,000 for the performance of a ceremony to appease the gods or for the purchase of Jyotish gems to restore one's health.

Upon discovering the deception, *JAMA* requested from the authors a full account of their connections to TM organizations. The confusing statement they provided was published as a financial disclosure correction on August 14 and represents only what the authors admitted. While it appears to hold the record in terms of length for a financial disclosure correction in the journal, the account is still incomplete. Among other things, Chopra did not acknowledge that he collects hundreds of thousands of dollars from his seminars on Maharishi Ayur-Veda and by providing Maharishi Ayur-Veda treatments. (According to David Perlman's October 2 *San Francisco Chonicle* article, Chopra claims he gives 50 percent to 70 percent of his fees to the movement.) He also did not report that he had been the sole stockholder, president, treasurer, and clerk of Maharishi Ayur-Veda Products International, Inc. (MAPI), the sole distributor of Maharishi Ayur-Veda products. Although he no longer holds these titles, Chopra still has the same office address and phone number as MAPI.

Peer Review Not Foolproof

JAMA's publication of the Maharishi Ayur-Veda article brought a hail of angry letters from readers (also published in the October 2 issue) along with some snickers from other publications. In its November 11 issue, *Physician's Weekly* published an account of *JAMA* getting "flim-flammed by a swami." The October 11 issue of *Science* knocked *JAMA* for publishing "shoddy science" and getting itself into an "Indian herbal jam."

Science writers know that the peer-review system of scientific publications is not foolproof. Drummond Rennie, M.D., deputy editor (West) of *JAMA*, has written: "There seems to be no study too fragmented, no hypothesis too trivial, no literature too biased or too egotistical, no design too warped, no methodology too bungled, no presentation of results too inaccurate, too obscure, and too contradictory, no analysis too self-serving, no argument too circular, no conclusions too trifling or too unjustified, and no grammar and syntax too offensive for a paper to end up in print." Peer review determines where rather than whether a paper should be published,

Rennie says. However, from time to time, "shoddy science" ends up in the most prestigious of journals.

It may be hard to understand how a system so effective in sifting out errors in experimental design, statistical analyses, and faulty conclusions could fail to catch blatant deceit. However, errors are usually easier to spot than outright deceit. Journals do not have the staff and resources to investigate contributing authors and must rely in large part on trust. Obviously, failure to disclose their conflicts of interest is a serious betrayal of that trust.

The editors who handled the Maharishi Ayur-Veda manuscript did not know about the history of deception associated with the TM movement, but they did know that two of the three authors had excellent medical and academic credentials. In addition, the authors were able to cite studies that were published in peer-reviewed journals to support their claims. (One study listed in their references was published in the *Journal of Conflict Resolution* [December 1988], a prestigious Yale University publication. This study purported to show that a group of yogic fliers in Israel was able to reduce the level of violence in war-torn Lebanon.) They also could point to the National Cancer Institute research grants awarded Sharma and others to study the herbal elixir, Maharishi Amrit Kalash.

Few people are aware of how far the TM movement has been able to penetrate the halls of medicine and academia. According to the letterhead for the American Association of Ayurvedic Medicine, its research council and advisory council include physicians at many prestigious medical schools and institutions. Sharma is professor of pathology and director of the Division of Cancer Prevention and Natural Products Research at Ohio State University College of Medicine. Others associated with Chopra include Steele Belok, M.D., and Amy Silver, M.D., both clinical instructors at Harvard Medical School; Agnes Lattimer, M.D., medical director of Cook County Hospital in Chicago; Kelvin O. Lim, M.D., assistant professor of psychiatry and behavioral science, Stanford University School of Medicine; Barry Marmorstein, M.D., associate professor, University of Washington School of Medicine; S. M. Siram, M.D., director of the Surgical Intensive Care Unit and Trauma at Howard University School of Medicine.

With the help of such well-placed physicians and academicians, the TM movement has been able to project a respectable front in its scheme to market Maharishi Ayur-Veda. In June, the American College of Preventive Medicine accredited Maharishi Ayur-Veda courses for continuing medical education for physicians, for the second time. The National Cancer Institute is currently funding 11 studies testing the anticancer potential of the concoction of herbs and minerals called Maharishi Amrit Kalash—even though its exact composition has not been revealed. The National Institutes of Health allows its facilities to be used for monthly introductory seminars on Maharishi Ayur-Veda. And for years, U.S. colleges and universities have allowed their facilities to be used by the TM movement to teach yogic flying.

JAMA's *Goof Not Unique*

The TM movement has an extremely aggressive public-relations operation with a remarkable record in getting favorable reports in newspapers, magazines, and the broadcast media. Like mushrooms after a spring rain,

articles on Chopra, TM, and the Maharishi's medicines keep popping up in places like the *Boston Globe*, the *Wall Street Journal*, the *Washington Post*, and even *American Medical News* (also published by the American Medical Association). Favorable reviews of Chopra's books on Maharishi Ayur-Veda have appeared in many leading medical journals. Joanne Silberner, medical reporter for *U.S. News and World Report*, says that Dean Draznin, former director of public affairs for Maharishi Ayur-Veda, used to call her about twice a month with another angle to pitch.

In August, *Johns Hopkins Magazine* published an uncritical profile on Nancy Lonsdorf, M.D., medical director of the Maharishi Ayur-Veda Medical Center in Washington, D.C. Lonsdorf is the physician who, in a fund-raising letter distributed to members of the TM community, is described as having recommended an $11,500 yagya for a patient with a serious health problem. The Maharishi's yagyas are Hindu ceremonies to appease the gods and beseech their help for ailing followers.

Despite the extraordinary costs of these ceremonies, patients do not take part or even get to see them performed. (Chopra and Lonsdorf both deny that they recommend yagyas. Chopra insists that yagyas are not part of the Maharishi Ayur-Veda program. Nevertheless, I have a copy of another patient's health analysis from Chopra's center in Lancaster, Massachusetts, that recommends the performance of not one but two different yagyas.)

In its September/October 1989 issue, *Harvard Magazine* published a cover story on Chopra by associate editor Craig Lambert that touted the Maharishi's wares. Reprints of this article were widely circulated by the TM movement. The magazine's readers were not informed that the author practices yogic flying. Lambert wrote *JAMA* a letter protesting my investigation and accusing me of "sleazy" and "deceptive" behavior. This letter was one of many sent to protest my inquiries. Among them were repeated requests from Chopra and his attorney that they be allowed to preview my article before publication, along with warnings that they may sue if defamed.

In the February 1984 *NASW Newsletter*, Patrick Young wrote: "Reporting any story that might prove embarrassing to a publication is filled with delightful irony. Editors, writers, and others who believe in and argue the public's right to know suddenly react as any good group of company executives, government bureaucrats, or union officials would in a similar situation. They draw up the wagons in a tight circle."

When I reported my findings to my editors, I feared that they too might choose to circle the wagons. Instead, they asked me to recount how the journal had been deceived and backed me against a stream of protests and threats from Maharishi's followers and attorneys.

Postscript, January 1992

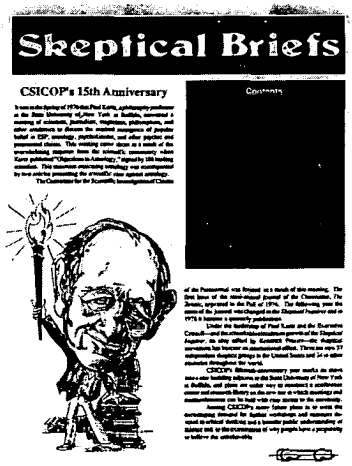
Since the publication of *JAMA*'s exposé, life has been anything but blissful for the Maharishi. The General Medical Council of Great Britain found two TM physicians guilty of serious professional misconduct for promoting Maharishi Ayur-Veda remedies as a treatment for AIDS and ordered that their names be struck from Britain's registry of physicians. (The physicians are appealing the ruling.) Maharishi has announced he is abandoning his operations in Washington, D.C., and has ordered his minions to retreat to

Fairfield, Iowa.

Dozens of print and electronic news media have carried stories about TM's deception and *JAMA*'s counterblast. That coverage continues more than three months after publication of the exposé.

As a result of information uncovered by *JAMA*'s investigation, TM's operations are being investigated by the U.S. Food and Drug Administration, the House of Representatives Subcommittee on Long-Term Health Care, and the National Institutes of Health. The most surprising result, however, may be the end of Zambian President Kenneth Kaunda's 27-year rule. According to a member of the anti-Kaunda coalition, the dictator had been planning to give one-fourth of the country's land to the TM movement. He credits *JAMA*'s exposé, which was widely distributed throughout Zambia, for helping to discredit and defeat the strongman in the October 31 election. He also reports that Maharishi's emissaries quickly fled the country following Kaunda's defeat.

Andrew Skolnick is associate editor for the Journal of the American Medical Association's *Medical News & Perspectives Department. This article is reprinted by permission from the Fall 1991* ScienceWriters, *the newsletter of the National Association of Science Writers.*



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Skeptical Briefs is the quarterly newsletter of the Committee for the Scientific Investigation of Claims of the Paranormal, published to inform skeptics about CSICOP activities and the pursuits of independent local and national skeptics organizations.

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The Cargo-Cult Science of Subliminal Persuasion

ANTHONY R. PRATKANIS

Imagine that it is the late 1950s—a time just after the Korean War, when terms like *brainwashing* and *mind control* were on the public's mind and films like the *Manchurian Candidate* depicted the irresistible influence of hypnotic trances. You and your friend are off to see *Picnic*, one of the more popular films of the day. However, the movie theater, located in Fort Lee, New Jersey, is unlike any you have been in before. Unbeknownst to you, the projectors have been equipped with a special device capable of flashing short phrases onto the movie screen at such a rapid speed that you are unaware that any messages have been presented. During the film, you lean over to your companion and whisper, "Gee, I'd love a tub of buttered popcorn and a Coke right now." To which he replies, "You're always hungry and thirsty at movies, shhhhh." But after a few moments he says, "You know, some Coke and popcorn might not be a bad idea."

A short time later you hear that you and your friend weren't the only ones desiring popcorn and Coke at the theater that day. According to reports in newspapers and magazines, James Vicary, an advertising expert, had secretly flashed, at a third of a millisecond, the words "Eat Popcorn" and "Drink Coke" onto the movie screen. His studies, lasting six weeks, involved thousands of moviegoing subjects who received a subliminal message every five seconds during the film. Vicary claimed an increase in Coke sales of 18 percent and a rise in popcorn sales of almost 58 percent. Upon reading their newspapers, most people were outraged and frightened by a technique so devilish that it

Despite the continued enthrallment of the American public, more than a century of research has failed to find evidence that subliminal commands influence behavior.

Natale, J. A. 1988. Are you open to suggestion? *Psychology Today*, September, pp. 28-30.

"Phone now," said CBC subliminally—but nobody did. 1958. *Advertising Age*, February 10, p. 8.

Pratkanis, A. R., and E. Aronson. 1992. *Age of Propaganda: The Everyday Use and Abuse of Persuasion*. New York: W. H. Freeman.

Pratkanis, A. R., and A. G. Greenwald. 1988. Recent perspectives on unconscious processing: Still no marketing applications. *Psychology & Marketing*, 5:339-355.

Pratkanis. A. R., J. Eskenazi, and A. G. Greenwald. 1990. "What You Expect Is What You Believe (But Not Necessarily What You Get): On the Effectiveness of Subliminal Self-help Audiotapes." Paper presented at the meeting of the Western Psychological Association, Los Angeles, Calif., April.

Russell, T. G., W. Rowe, and A. D. Smouse. 1991. Subliminal self-help tapes and academic achievement: An evaluation. *Journal of Counseling & Development*, 69:359-362.

Subliminal ad is transmitted in test but scores no popcorn sales. 1958. *Advertising Age*, January 20.

Subliminal has a test; can't see if it works. 1958. *Printer's Ink*, January 17.

Suslowa, M. 1863. Veranderungen der hautgefule unter dem einflusse electrischer reizung. *Zeitschrift fur Rationelle Medicin*, 18:155-160.

Synodinos, N. E. 1988. Subliminal stimulation: What does the public think about it? *Current Issues & Research in Advertising*, 11:157-187.

Titchener, E. B., and W. H. Pyle. 1907. The effect of imperceptible shadows on the judgment of distance. *Proceedings of the American Philosophical Society*, 46:94-109.

Vance and Belknap v. *Judas Priest and CBS Records*. 86-5844/86-3939. Second District Court of Nevada. August 24, 1990.

Weir, W. 1984. Another look at subliminal "facts." *Advertising Age*, October 15, p. 46.

Zanot, E. J., J. D. Pincus, and E. J. Lamp. 1983. Public perceptions of subliminal advertising. *Journal of Advertising*, 12:37-45.

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could bypass their conscious intellect and beam *subliminal* commands directly to their subconscious. (See Moore, this issue, for a definition of "subliminal.")

In an article titled "Smudging the Subconscious," Norman Cousins (1957) captured similar feelings as he pondered the true meaning of such a device. As he put it, "If the device is successful for putting over popcorn, why not politicians or anything else?" He wondered about the character of people who would dream up a machine to "break into the deepest and most private parts of the human mind and leave all sorts of scratchmarks." Cousins concluded that the best course of action would be "to take this invention and everything connected to it and attach it to the center of the next nuclear explosive scheduled for testing."

Cousins's warnings were taken to heart. The Federal Communications Commission immediately investigated the Vicary study and ruled that the use of subliminal messages could result in the loss of a broadcast license. The National Association of Broadcasters prohibited the use of subliminal advertising by its members. Australia and Britain banned subliminal advertising. A Nevada judge ruled that subliminal communications are not protected as free speech.

The Vicary study also left an enduring smudge on Americans' consciousness—if not their *sub*conscious. As a teacher of social psychology and a persuasion researcher, one of the questions I am most frequently asked is, "Do you know about the 'Eat Popcorn/Drink Coke' study that *they* did?" At cocktail parties, I am often pulled aside and, in hushed tones, told about the "Eat Popcorn/Drink Coke" study. Indeed, my original interest in subliminal persuasion was motivated by an attempt to know how to respond to such questions.

"In a 1962 interview, James Vicary announced that the 'Eat Popcorn/Drink Coke' study was a fabrication intended to increase customers."

Three public-opinion polls indicate that the American public shares my students' fascination with subliminal influence (Haber 1959; Synodinos 1988; Zanot, Pincus, and Lamp 1983). By 1958, just nine months after the Vicary subliminal story first broke, 41 percent of survey respondents had heard of subliminal advertising. This figure climbed to 81 percent in the early 1980s, with more than 68 percent of those aware of the term believing that it was effective in selling products. Most striking, the surveys also revealed that many people learn about subliminal influence through the mass media and through courses in high school and college.

But there is a seamier side to the "Eat Popcorn/Drink Coke" study—one that is rarely brought to public attention. In a 1962 interview with *Advertising Age*, James Vicary announced that the original study was a fabrication intended to increase customers for his failing marketing business. The circumstantial evidence suggests that this time Vicary was telling the truth. Let me explain by recounting the story of the "Eat Popcorn/Drink Coke" study as best I can, based on various accounts published in academic journals and trade magazines (see Advertising Research Foundation 1958; "ARF Checks" 1958; Danzig 1962; McConnell, Cutler, and McNeil 1958; "Subliminal Ad" 1958; "Subliminal Has" 1958; Weir 1984).

Advertisers, the FCC, and research

psychologists doubted Vicary's claims from the beginning and demanded proof. To meet these demands, Vicary set up demonstrations of his machine. Sometimes there were technical difficulties in getting the machine to work. When the machine did work, the audience felt little compulsion to comply with subliminal commands, prompting an FCC commissioner to state, "I refuse to get excited about it—I don't think it works" ("Subliminal Has" 1958).

In 1958, the Advertising Research Foundation pressed Vicary to release his data and a detailed description of his procedures. They argued that it had been more than a year since the results were made public and yet there had been no formal write-up of the experiment, which was necessary to evaluate the claims. To this day, there has been no primary published account of the study, and scientists interested in replicating the results must rely on accounts published in such magazines as the *Senior Scholastic* ("Invisible Advertising" 1957), which, although intended for junior-high students, presents one of the most detailed accounts of the original study.

Pressures for a replication accumulated. Henry Link, president of Psychological Corporation, challenged Vicary to a test under controlled conditions and supervised by an independent research firm. No change occurred in the purchase of either Coke or popcorn (Weir 1984). In one of the more interesting attempted replications, the Canadian Broadcast Corporation, in 1958, subliminally flashed the message "Phone Now" 352 times during a popular Sunday-night television show called *Close-up* ("Phone Now" 1958). Telephone usage did not go up during that period. Nobody called the station. When asked to guess the message, viewers sent close to five hundred letters, but not one contained the correct answer. However, almost half of the respondents claimed to be hungry or thirsty during the show. Apparently, they guessed (incorrectly) that the message was aimed at getting them to eat or drink.

Finally, in 1962 James Vicary lamented that he had handled the subliminal affair poorly. As he stated, "Worse than the timing, though, was the fact that we hadn't done any research, except what was needed for filing for a patent. I had only a minor interest in the company and a small amount of data—too small to be meaningful. And what we had shouldn't have been used promotionally" (Danzig 1962). This is not exactly an affirmation of a study that supposedly ran for six weeks and involved thousands of subjects.

My point in presenting the details of the Vicary study is twofold. First, the "Eat Popcorn/Drink Coke" affair is not an isolated incident. The topic of subliminal persuasion has attracted the interest of Americans on at least four separate occasions: at the turn of the century, in the 1950s, in the 1970s, and now in the late 1980s and early 1990s. Each of these four flourishings of subliminal persuasion show a similar course of events. First, someone claims to find an effect; next, others attempt to replicate that effect and fail; the original finding is then criticized on methodological grounds; nevertheless the original claim is publicized and gains acceptance in lay audiences and the popular imagination. Today we have reached a point where one false effect from a previous era is used to validate a false claim from another. For example, I recently had the occasion to ask a manufacturer of subliminal self-help audiotapes for evidence of his claim that his tapes had therapeutic value. His reply: "You are a psychologist. Don't

you know about the study they did where they flashed Eat Popcorn and Drink Coke' on the movie screen?"

During the past few years, I have been collecting published articles on subliminal processes—research that goes back over a hundred years (Suslowa 1863) and includes more than a hundred articles from the mass media and more than two hundred academic papers on the topic (Pratkanis and Greenwald 1988). In none of these papers is there clear evidence in support of the proposition that subliminal messages influence behavior. Many of the studies fail to find an effect, and those that do either cannot be reproduced or are fatally flawed on one or more methodological grounds, including: the failure to control for subject expectancy and experimenter bias effects, selective reporting of positive over negative findings, lack of appropriate control treatments, internally inconsistent results, unreliable dependent measures, presentation of stimuli in a manner that is not truly subliminal, and multiple experimental confounds specific to each study. As Moore (*SI*, this issue) points out, there is considerable evidence for subliminal perception or the detection of information outside of self-reports of awareness. However, subliminal perception should *not* be confused with subliminal persuasion or influence—motivating or changing behavior—for which there is little good evidence (see McConnell, Cutler, and McNeil 1958; Moore 1982 and 1988).

"YOU KNOW A COKE AND A POPCORN MIGHT NOT BE A BAD IDEA RIGHT NOW."

My second reason for describing the Vicary study in detail is that it seems to me that our fascination with subliminal persuasion is yet another example of what Richard Feynman (1985) called "cargo-cult science." For Feynman, a cargo-cult science is one that has all the trappings of science—the illusion of objectivity, the appearance of careful study, and the motions of an experiment—but lacks one important ingredient: skepticism, or a leaning over backward to see if one might be mistaken. The essence of science is to doubt your own interpretations and theories so that you may improve upon them. This skepticism is often missing in the interpretation of studies claiming to find subliminal influence. Our theories and wishes for what we would like to think the human mind is capable of doing interferes with our ability to see what it actually does.

The cargo-cult nature of subliminal research can be seen in some of the first studies on the topic done at the turn of the century. In 1900, Dunlap reported a subliminal Müller-Lyer illusion—a well-known illusion in which a line is made to appear shorter or longer depending on the direction of angles placed at its ends. Dunlap flashed an "imperceptible shadow" or line to subliminally create this illusion. He claimed that his subjects' judgment of length was influenced by the imperceptible shadows. However, Dunlap's results could not be immediately replicated by either Titchener and Pyle (1907) or by Manro and Washburn (1908). Nevertheless, this inconsistency of findings did not stop Hollingworth (1913) from discussing the subliminal Müller-Lyer illusion in his advertising textbook or from drawing the conclusion that subliminal influence is a powerful tool available to the advertiser.

I contend that it was no accident that subliminal influence was first investigated in America at the turn of the century. The goal of demonstrating the power of the subliminal mind became an important one for many people at that time. It was a time of great religious interest, as illustrated by academic books on the topic, religious fervor among the populace, and the further development of a uniquely American phenomenon—the spiritual self-help group. One such movement, popular in intellectual circles, was called "New Thought," which counted William James among its followers. The doctrine of New Thought stated that the mind possesses an unlimited but hidden power that could be tapped—if one knew how—to bring about a wonderful, happy life and to exact physical cures. Given the rise of industrialization and the anonymity of newly formed city life, one can see how a doctrine of the hidden power of the individual in the face of realistic powerlessness would be well received in some circles.

The historian Robert Fuller (1982; 1986) traces the origins of New Thought and similar movements to early American interest in the teachings of Franz Anton Mesmer. Fuller's point is that the powerful unconscious became a replacement for religion's "soul." Mesmer's doctrines contended that each person possessed a hidden, though strong, physical force, which he termed *animal magnetism*. This force could be controlled by the careful alignment of magnets to effect personality changes and physical cures. On one level, mesmerism can be viewed as a secularization of the metaphor of spiritual humans that underlies witchcraft. Animal magnetism replaced the soul, and good and bad magnets replaced angels and devils that could invade the body and affect their will. Mesmerism was introduced to America at the beginning of the

nineteenth century and, characteristic of Yankee ingenuity, self-help movements soon sprang up with the goal of improving on Mesmer's original magnet therapy; they did so by developing the techniques of hypnotism, séances, the healing practices of Christian Science, positive thinking, and the speaking cure.

With the distance of a century, we overlook the fact that many journals of the nineteenth century were devoted to archiving the progress of mesmerism and with documenting the influence of the unconscious on the conscious. As Dunlap (1900) said in the introduction to his article on the subliminal Müller-Lyer illusion, "If such an effect is produced, then we have evidence for the belief that under certain conditions things of which we are not and can not become conscious have their immediate effects upon consciousness." In other words, we would have one of the first scientific demonstrations that the unconscious can powerfully influence the conscious. A simple step perhaps, but who knows what wonderful powers of the human mind wait to be unleashed.

As a postscript to the subliminal Müller-Lyer affair, I should point out that 30 years later Joseph Bressler—a student of Hollingworth—was able to reconcile the empirical differences between Dunlap and his opponents. Bressler (1931) found that as the subliminal angles increased in intensity—that is, as they approached the threshold of awareness—the illusion was more likely to be seen. This finding, along with many others, served as the basis for concluding that there is no absolute threshold of awareness—it can vary as a function of individual and situational factors—and led to the hypothesis that, on some trials, subjects could see enough of the stimulus to improve their guessing at what might be there. (See also Holender 1986 and Cheesman and Merikle's 1985 distinction between objective and subjective thresholds.)

"Tape company representatives are likely to present you with a rather lengthy list of 'studies' demonstrating their claims. Don't be fooled."

Other manifestations of "subliminal-mania" illustrate additional aspects of a cargo-cult science. In the early 1970s, during the third wave of popular interest in subliminal persuasion, the best-selling author Wilson Bryan Key (1973; 1976; 1980; 1989) advanced the cargo-cult science of subliminal seduction in two ways. (See also Creed 1987.) First, Key argued that subliminal techniques were not just limited to television and movies. Cleverly hidden messages aimed at inducing sexual arousal are claimed to be embedded in the photographs of print advertisements. Key found the word *sex* printed on everything from Ritz crackers to the ice cubes in a Gilbey Gin ad. Second, Key was successful in linking the concept of subliminal persuasion to the issues of his day. The 1970s were a period of distrust by Americans of their government, businesses, and institutions. Key claimed that big advertisers and big government are in a conspiracy to control our minds using subliminal implants.

The legacy of Key's cargo-cult science is yet with us. I often ask my students at the University of California, Santa Cruz, if they have heard of the term *subliminal persuasion* and, if so, where. Almost all have heard

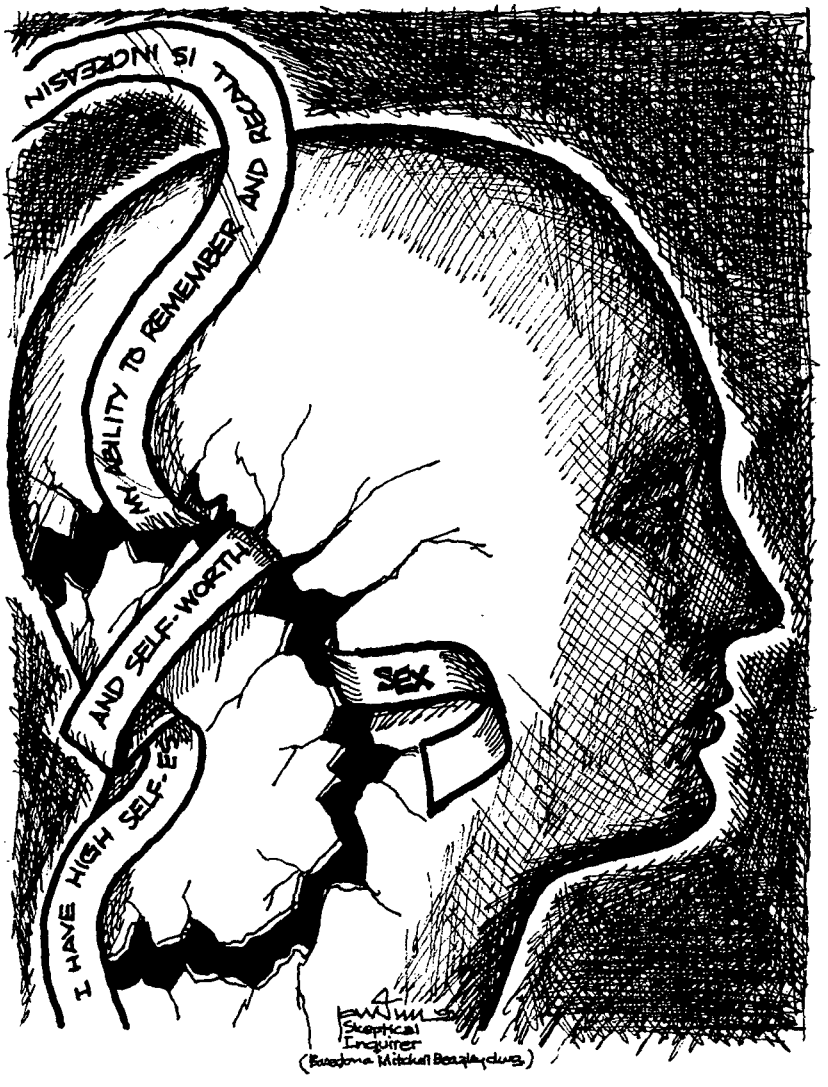
of the term and about half report finding out about it in high school. Many received an assignment from their teachers to go to the library and look through magazine ads for subliminal implants.

These teachers miss an opportunity to teach science instead of cargo-cult science. Key (1973) reports a study where more than a thousand subjects were shown the Gilbey Gin ad that supposedly contained the word *sex* embedded in ice cubes. Sixty-two percent of the subjects reported feeling "aroused," "romantic," "sensuous." Instead of assuming that Key was right and sending students out to find subliminals, a science educator would encourage a student to ask, "But where is the control group in the Gilbey Gin ad study? Perhaps an even higher percentage would report feeling sexy if the subliminal "sex" was removed—perhaps the same, perhaps less. One just doesn't know.

Now in the late 1980s and early 1990s, we see a fourth wave of interest in subliminal influence. Entrepreneurs have created a $50-million-plus industry offering subliminal self-help audio- and video-tapes designed to improve everything from self-esteem to memory, to employee and customer relations, to sexual responsiveness, and—perhaps most controversial—to overcoming the effects of family and sexual abuse (Natale 1988). The tapes work, according to one manufacturer, because "subliminal messages bypass the conscious mind, and imprint directly on the subconscious mind, where they create the basis for the kind of life you want." Part of the popularity of such tapes no doubt springs from the tenets of New Age. Like its predecessor New Thought, New Age also postulates a powerful hidden force in the human personality that can be controlled for the good, not by magnets, but by crystals, and can be redirected with subliminal commands.

Accusations concerning the sinister use of subliminal persuasion continue as well. In the summer of 1990, the rock band Judas Priest was placed on trial for allegedly recording, in one of their songs, the subliminal implant "Do it." This message supposedly caused the suicide deaths of Ray Belknap and James Vance.

What is the evidence that subliminal influence, despite not working in the 1900s, 1950s, and 1970s, is now effective in the 1990s? Tape company representatives are likely to provide you with a rather lengthy list of "studies" demonstrating their claims. Don't be fooled. The studies on these lists fall into two camps—those done by the tape companies and for which full write-ups are often not available, and those that have titles that sound as if they apply to subliminal influence, but really don't. For example, one company lists many subliminal-perception studies to support its claims. It is a leap of faith to see how a lexical priming study provides evidence that a subliminal self-help tape will cure insomnia or help overcome the trauma of being raped. Sadly, the trick of claiming that something that has nothing to do with subliminal influence really does prove the effectiveness of subliminal influence goes back to the turn of the century. In the first footnote to their article describing a failure to replicate Dunlap's subliminal Müller-Lyer effect, Titchener and Pyle (1907) state: "Dunlap finds a parallel to his own results in the experiments of Pierce and Jastrow on small difference of sensations. There is, however, no resemblance whatever between the two investigations." In a cargo-cult science, any evidence—even irrelevant facts—is of use and considered valuable.



Recently, there have been a number of studies that directly tested the effectiveness of subliminal self-help tapes. I conducted one such study in Santa Cruz with my colleagues Jay Eskenazi and Anthony Greenwald (Pratkanis, Eskenazi, and Greenwald 1990). We used mass-marketed audiotapes with subliminal messages designed to improve either self-esteem or memory abilities. Both types of tapes contained the same supraliminal content—various pieces of classical music. However, they differed in their subliminal content. According to the manufacturer, the self-esteem tapes contained subliminal messages like "I have high self-worth and high self-esteem." The memory tape contained subliminal messages like "My ability to remember and recall is increasing daily."

Using public posters and ads placed in local newspapers, we recruited

volunteers who appeared most interested in the value and potential of subliminal self-help therapies (and who were probably similar to those likely to buy such tapes). On the first day of the study, we asked our volunteers to complete three different self-esteem and three different memory measures. Next they randomly received their subliminal tape, but with an interesting twist. Half of the tapes were mislabeled so that some of the subjects received a memory tape, but thought it was intended to improve self-esteem, whereas others received a self-esteem tape that had been mislabeled as memory improvement. (Of course half the subjects received correctly labeled tapes.)

The volunteers took their tapes home and listened to them every day for five weeks (the period suggested by the manufacturer for maximum effectiveness). During the listening phase, we attempted to contact each subject about once a week to encourage their daily listening. Only a handful of subjects were unable to complete the study, suggesting a high level of motivation and interest in subliminal therapy. After five weeks of daily listening, they returned to the laboratory and once again completed self-esteem and memory tests and were also asked to indicate if they believed the tapes to be effective.

The results: the subliminal tapes produced *no* effect (improvement or decrement) on either self-esteem or memory. But our volunteers did not believe this to be the case. Subjects who thought they had listened to a self-esteem tape (regardless of whether they actually did or not) were more likely to be convinced that their self-esteem had improved, and those who thought they had listened to a memory tape were more likely to believe that their memory had improved as a result of listening to the tape. We called this an illusory placebo effect—placebo, because it was based on expectations; illusory, because it wasn't real. In sum, the subliminal tapes did nothing to improve self-esteem or memory abilities but, to some of our subjects, they appeared to have an effect. As we put it in the title of our report of this study, "What you expect is what you believe, but not necessarily what you get."

Our results are not a fluke. We have since repeated our original study twice using different tapes and have yet to find an effect of subliminal messages upon behavior as claimed by the manufacturer (Greenwald, Spangenberg, Pratkanis, and Eskenazi 1991). By combining our data from all three studies, we gain the statistical power to detect quite small effects. Still, there is no evidence of a subliminal effect consistent with the manufacturers' claims.

Other researchers are also finding that subliminal self-help tapes are of no benefit to the user. In a series of three experiments, Auday, Mellett, and Williams (1991) tested the effectiveness of bogus and real subliminal tapes designed either to improve memory, reduce stress and anxiety, or increase self-confidence. The subliminal tapes proved ineffective on all three fronts. Russell, Rowe, and Smouse (1991) tested subliminal tapes designed to improve academic achievement and found the tapes improved neither grade point average nor final examination scores. Lenz (1989) had 270 Los Angeles police recruits listen for 24 weeks to music with and without subliminal implants designed to improve either knowledge of the law or marksmanship. The tapes did not improve either. In a recent test, Merikle and Skanes (1991) found that overweight subjects who listened to subliminal weight-loss

tapes for five weeks showed no more weight loss than did control subjects. In sum, independent researchers have conducted 9 studies to evaluate the effectiveness of subliminal self-help tapes. All 9 studies failed to find an effect consistent with the manufacturers' claims. (See also Eich and Hyman 1991.)

It appears that, despite the claims in books and newspapers and on the backs of subliminal self-help tapes, subliminal-influence tactics have not been demonstrated to be effective. Of course, as with anything scientific, it may be that someday, somehow, someone will develop a subliminal technique that may work, just as someday a chemist may find a way to transmute lead to gold. I am personally not purchasing lead futures on this hope however.

The history of the subliminal controversy teaches us much about persuasion—but not the subliminal kind. If there is so little scientific evidence of the effectiveness of subliminal influence, why then do so many Americans believe it works? In a nutshell, I must conclude, with Feynman, that despite enjoying the fruits of science, we are not a scientific culture, but one of ill-directed faith as defined in Hebrews 11:1 (KJV): "Now faith is the substance of things hoped for, the evidence of things not seen."

We can see the workings of this faulty faith, not science, in the more than a hundred popular press articles on the topic of subliminal persuasion. Many of the articles (36 percent) deal with ethical and regulatory concerns of subliminal practices—assuming them to be effective. Only 18 percent of the articles declare flatly that subliminal influence is ineffective, with the remaining either claiming that it works or suggesting a big "maybe" to prompt readers' concern. In general, popular press articles fail to rely on scientific evidence and method to critically evaluate subliminal findings. Positive findings are emphasized and null results rarely reported. Problems with positive subliminal findings, such as lack of control groups, expectancy effects, setting subliminal thresholds, and so on, are rarely mentioned. If negative information is given, it is often presented at the end of the article, giving the reader the impression that, at best, the claims for subliminal effectiveness are somewhat controversial. Recent coverage of subliminal self-help tapes, however, have been less supportive of subliminal claims—but this may reflect more of an attack on big business than an embrace of science.

Instead of the scientific method, those accused of subliminal persuasion (mostly advertisers) are subjected to what can be termed the "witch test." During the Middle Ages, one common test of witchcraft was to tie and bind the accused and throw her into a pond. If she floats, she is a witch. If she drowns, then her innocence is affirmed. Protestations by the accused were taken as further signs of guilt.

How do we know that subliminals work and that advertisers use them? As Key notes, advertisers spend a considerable amount of money on communications that contain subliminal messages. Why would they spend such vast sums if subliminal persuasion is ineffective? The fact that these subliminal messages cannot be readily identified or seen and that the advertisers deny their use further demonstrates the craftiness of the advertiser. After all, witches are a wiley lot, carefully covering their tracks. It appears that the only way that advertisers can prove their innocence, by the logic of the witch test, is to go out of business at the bottom of the

pond, thereby showing that they do not possess the arts of subliminal sorcery. In contrast, just as the motives of the Inquisition for power and fortune went unquestioned, so too the motives of the proponents of subliminal seduction, who frequently profit by the sale of more newspapers, books, or audiotapes, are rarely (or have only recently been) questioned.

The proponents of subliminal persuasion make use of our most sacred expectations, hopes, and fears. Each manifestation of interest in subliminal influence has been linked to the important philosophies and thinking of the day—New Thought in the 1900s, brainwashing in the 1950s, the corruption of big governments in the 1970s, and New Age philosophy today.

But the belief in subliminal persuasion provides much more for the individual. We live in an age of propaganda; the average American will see approximately seven million advertisements in a lifetime. We provide our citizens with very little education concerning the nature of these persuasive processes. The result is that many may feel confused and bewildered by basic social processes (see Pratkanis and Aronson 1992). The negative side of subliminal persuasion is presented as an irrational force outside the control of the message recipient. As such, it takes on a supernatural "devil made me do it" quality capable of justifying and explaining why Americans are often persuaded and can seemingly engage in irrational behavior. Why then did I buy this worthless product at such a high price? Subliminal sorcery. On the positive side, a belief in subliminal persuasion imbues the human spirit at least with the possibility of overcoming the limitations of being human and of living a mundane existence. We can be like the gods—healing ourselves, finding enjoyment in everything we do, working for the benefit of humankind by tapping our own self potentials. Perhaps our theories of what should be or what we would like to be have caused us to be a little less critical of the claims for the power of subliminal influence.

But belief in subliminal persuasion is not without its cost. Perhaps the saddest aspect of the subliminal affair is that it distracts our attention from more substantive issues. By looking for subliminal influences, we may ignore more powerful, blatant influence tactics employed by advertisers and sales agents. We may ignore other, more successful ways—such as science—for reaching our human potentials.

Consider the tragic suicide deaths of teenagers Ray Belknap and James Vance that were brought to light in the recent trial of Judas Priest. They lived troubled lives—lives of drug and alcohol abuse, run-ins with the law, learning disabilities, family violence, and chronic unemployment. What issues did the trial and the subsequent mass-media coverage emphasize? Certainly not the need for drug treatment centers; there was no evaluation of the pros and cons of America's juvenile justice system, no investigation of the schools, no inquiry into how to prevent family violence, no discussion of the effects of unemployment on a family. Instead, our attention was mesmerized by an attempt to count the number of subliminal demons that can dance on the end of a record needle.

In this trial, Judge Jerry Carr Whitehead (*Vance & Belknap v. Judas Priest & CBS Records* 1990) ruled in favor of Judas Priest, stating: "The scientific research presented does not establish that subliminal stimuli, even if perceived, may precipitate conduct of this magnitude. There exist other

factors which explain the conduct of the deceased independent of the subliminal stimuli." Perhaps now is the time to lay the myth of subliminal sorcery to rest and direct our attention to other, more scientifically documented ways of understanding the causes of human behavior and improving our condition.

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References

Advertising Research Foundation. 1958. *The Application of Subliminal Perception in Advertising.* New York, N.Y.

ARF checks data on subliminal ads; verdict: "Insufficient." 1958. *Advertising Age,* September 15.

Auday, B. C., J. L. Mellett, and P. M. Williams. 1991. Self-improvement Using Subliminal Self-help Audiotapes: Consumer Benefit or Consumer Fraud?" Paper presented at the meeting of the Western Psychological Association, San Francisco, Calif., April.

Bressler, J. 1931. Illusion in the case of subliminal visual stimulation. *Journal of General Psychology,* 5:244-251.

Cheesman, J., and P. M. Merikle. 1985. Word recognition and consciousness. In *Reading Research Advances in Theory and Practice,* vol. 5, ed. by D. Besner, T. G. Waller, and G. E. MacKinnon, 311-352. New York: Academic Press.

Cousins, N. 1957. Smudging the subconscious. *Saturday Review,* October 5, p. 20.

Creed, T. T. 1987. Subliminal deception: Pseudoscience on the college lecture circuit. SKEPTICAL INQUIRER, 11:358-366.

Danzig, F. 1962. Subliminal advertising—Today it's just historic flashback for researcher Vicary. *Advertising Age,* September 17.

Dunlap, K. 1900. The effect of imperceptible shadows on the judgment of distance. *Psychological Review,* 7:435-453.

Eich, E., and R. Hyman. 1991. "Subliminal Self-help." In *In the Mind's Eye: Enhancing Human Performance,* ed. by D. Druckman and R. A. Bjork, 107-119. Washington, D.C.: National Academy Press.

Feynman, R. P. 1985. *Surely You're Joking, Mr. Feynman!* New York: Bantam Books.

Fuller, R. C. 1982. *Mesmerism and the American Cure of Souls.* Philadelphia: University of Pennsylvania Press.

———. 1986. *Americans and the Unconscious.* New York: Oxford Press.

Greenwald, A. G., E. R. Spangenberg, A. R. Pratkanis, and J. Eskenazi. 1991. Double-blind tests of subliminal self-help audiotapes. *Psychological Science,* 2:119-122.

Haber, R. N. 1959. Public attitudes regarding subliminal advertising. *Public Opinion Quarterly,* 23:291-293.

Holender, D. 1986. Semantic activation without conscious identification in dichotic listening, parafoveal vision, and visual masking: A survey and appraisal. *Behavior and Brain Sciences,* 9:1-66.

Hollingworth, H. L. 1913. *Advertising and Selling.* New York: D. Appleton

Invisible Advertising. 1957. *Senior Scholastic,* October 4.

Key, W. B. 1973. *Subliminal Seduction.* Englewood Cliffs, N.J.: Signet.

———. 1976. *Media Sexploitation.* Englewood Cliffs, N.J.: Signet.

———. 1980. *The Clam-plate Orgy.* Englewood Cliffs, N.J.: Signet.

———. 1989. *The Age of Manipulation.* New York: Holt.

Lenz, S. 1989. "The Effect of Subliminal Auditory Stimuli on Academic Learning and Motor Skills Performance Among Police Recruits." Unpublished doctoral dissertation, California School of Professional Psychology, Los Angeles, Calif.

Manro, H. M., and M. F. Washburn. 1908. The effect of imperceptible line on the judgment of distance. *American Journal of Psychology,* 19:242.

McConnell, J. V., R. I. Cutler, and E. B. McNeil. 1958. Subliminal stimulation: An overview. *American Psychologist,* 13:229-242.

Merikle, P., and H. E. Skanes. 1991. "Subliminal Self-help Audiotapes: A Search for Placebo Effects." Unpublished manuscript, University of Waterloo, London, Ontario.

Moore. T. E. 1982. Subliminal advertising: What you see is what you get. *Journal of Marketing,* 46:38-47.

———. 1988. The case against subliminal manipulation. *Psychology & Marketing,* 5:297-316.

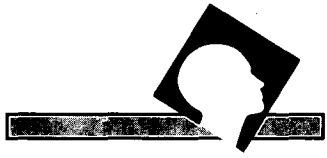
Subliminal Perception: Facts and Fallacies

TIMOTHY E. MOORE

Can the meaning of a stimulus affect the behavior of observers in some way in the absence of their awareness of the stimulus? In a word, *yes*. While there is some controversy, there is also respectable scientific evidence that observers' responses *can* be shown to be affected by stimuli they claim not to have seen. To a cognitive psychologist this is not particularly earthshaking, but the media and the public have often responded to the notion of subliminal perception with trepidation.

What is subliminal perception? Should we be worried (or perhaps enthused) about covert manipulation of thoughts, attitudes, and behaviors? My reviews (Moore 1982; 1988) have dealt primarily with the validity of the more dramatic claims made on behalf of subliminal techniques and devices. Such an appraisal requires a working definition of "subliminal perception." Then we need to determine whether the conditions under which it occurs and the means by which it is achieved are reflected in the products on the market.

How should "awareness" be defined? One way is simply to ask observers whether or not they are "aware" of a stimulus. If the observer denies any awareness, then the stimulus, is, by definition, below an awareness threshold. Using this approach, unconscious perception consists of demonstrating that observers can be affected by stimuli *whose presence they do not report.* Another way to define "awareness" involves requiring observers to distinguish between two or more stimuli that are presented successively. With fast exposure durations, observers may be



Recent research in subliminal perception has provided very little evidence that stimuli below observers' subjective thresholds influence motives, attitudes, beliefs, or choices.

unable to distinguish between stimuli, or between a stimulus's presence or absence. This method was advocated by Eriksen (1960) and defines consciousness as the observer's ability to discriminate between two or more alternative stimuli in a forced-choice task. In this context, unconscious perception consists of a demonstration that observers are affected by stimuli *whose presence they cannot detect.* The approaches are different and involve different sorts of evidence. In the former case the stimuli are not reported; in the latter instance the stimuli cannot be detected.

These two methods of defining consciousness have been referred to as "subjective" and "objective," respectively, by Merikle and his coworkers (Cheesman and Merikle 1986; Merikle and Cheesman 1986). Higher levels of visibility are typically associated with subjective thresholds. The disadvantage of a subjective definition is that a failure to report a stimulus's presence may result from response bias (i.e., the observer is ambivalent about the stimulus's presence and elects to report its absence). As Merikle (1984) has argued, the use of subjective thresholds implies that each participant provides his or her own idiosyncratic definition of "awareness." Consequently, awareness thresholds could (and would) vary greatly from subject to subject.

Some recent studies (e.g., Cheesman and Merikle 1986) have looked at performance when both subjective *and* objective thresholds have been assessed. Such studies indicate that subliminal perception is most appropriately viewed as perception in the absence of concurrent phenomenal experience. We sometimes receive information when subjectively we feel that nothing useful has been "seen." Investigators can establish that perception has occurred in the face of disavowals from participants by forcing them to guess. Respondents may object that they have no basis for making a decision, but by using a forced-choice task we can see that their guesses are more accurate than they would be if they were guessing at random. Clearly, some information is being utilized.

When respondents' guesses *are* at chance in a detection task, there is no well-established evidence for perception. Thus, subliminal perception is not perception in the absence of a detectable signal. Rather, it occurs under conditions where subjects *can* detect a signal on at least some proportion of trials. Subjects may claim to be guessing without realizing that their guesses are better than chance. According to Merikle, the dissociation between these two indicators of perception (signal detection vs. introspective reports) defines the necessary empirical conditions for demonstrating subliminal perception. There is an inconsistency between what observers know and what "they know they know."

Recent reviews of research findings in subliminal perception have provided very little evidence that stimuli below observers' subjective thresholds influence motives, attitudes, beliefs, or choices (Moore 1988; 1991b; Pratkanis and Greenwald 1988; Greenwald, in press). In most studies, the stimuli do not consist of directives, commands, or imperatives, and there is no reliable evidence that subliminal stimuli have any pragmatic impact or effects on intentions. Studies that do purport to find such effects are either unreplicated or methodologically flawed in one or more ways (Pratkanis, this issue). There is very little evidence for any perceptual processing *at all* (let alone any pragmatic consequences) when perceptual awareness is equated with

an objective threshold.

How do the dramatic claims regarding undetectable stimuli stack up against the preceding review? What are these claims and what is their status? I shall confine my comments to claims involving advertising applications and self-help auditory tapes.

Advertising

Many people believe that most advertisements contain hidden sexual images or words that affect our susceptibility to the ads. This belief is widespread even though there is no evidence for such practices, let alone evidence for such effects. "Embedded" stimuli are difficult to characterize in terms of signal-detection theory or threshold-determination procedures because most of them remain unidentifiable even when focal attention is directed to them. Nevertheless, the use of the term *subliminal* is a fait accompli, and belief in such an influence is primarily the consequence of the writings and lectures of just one person—Wilson Bryan Key (1973; 1976; 1980; 1990). Key offers no scientific evidence to support the existence of subliminal images; nor does he provide any empirical documentation of their imputed effects (Creed 1987; see also Vokey and Read 1985).

In a review of Key's most recent book, John O'Toole, president of the American Association of Advertising Agencies wondered: "Why is there a market for yet another re-run of this troubled man's paranoid nightmares?" (O'Toole 1989: 26). Part of the reason that Key's books sell so well may be that they are not what they appear to be. The information is not presented as the subjective fantasies of one person. Instead, it is presented as scientific, empirical fact. Science is respectable. Consequently, if claims

"Subliminal advertising and psychotherapeutic effects from subliminal tapes are ideas whose scientific status appears to be on a par with wearing copper bracelets to cure arthritis."

are cloaked in scientific jargon, and if propositions are asserted to be scientifically valid, people can be fooled. Key knows this and uses it to his advantage. His intent is to persuade; and if he can do so by misrepresenting scientific data and findings, he is apparently prepared to do so.

Key provided pretrial testimony at the Judas Priest trial in Reno, Nevada, in the summer of 1990. Two teenagers had committed suicide. Their parents sued Judas Priest and CBS Records Inc., alleging that subliminal messages in Judas Priest's music contributed to the suicides. Key was testifying on behalf of the plaintiffs, and at the trial he responded to a question about scientific methodology by saying: "Science is pretty much what you can get away [with] at any particular point in history and you can get away with a great deal" (*Vance/Roberson v. CBS/Judas Priest*, 1990: 60). This unabashed disdain for anything approaching scientific integrity has not endeared him to the scientific community.

Attempting to apply scientific criteria to propositions for which there is no pretense at scientific foundation is a relatively futile exercise. Key's only interest in science seems to be in the persuasive power of adopting a scientific posture or style. The use of scientific jargon does not necessarily reflect scientific attitudes or methods. Under these cir-

cumstances, even to apply the term *pseudoscience* seems unwarranted.

Extravagant claims notwithstanding, advertising may affect us in subtle and indirect ways. While there is no scientific evidence for the existence of "embedded" figures or words, let alone effects from them, the images and themes contained in advertisements may well influence viewers' attitudes and values without their awareness. In other words, the viewer may be well aware of the stimulus, but not necessarily aware of the connection between the stimulus and responses or reactions to it. For example, there was a television commercial a few years ago for skin cream in which a mother and daughter were portrayed. The viewer was challenged to distinguish mother from daughter. According to Postman (1988), the unstated message is that in our culture it is desirable that a mother not look older than her daughter. A number of social scientists believe that advertising may play a role in the development of personal identity and social values (Leiss, Klein, and Jhally 1986; Schudson 1984; Wachtel 1983). It is difficult, however, to isolate advertising's role from the many other social forces at work. Moreover, most research on advertising effects consists of content analyses of the ads themselves. Such studies leave many unanswered questions about the impact of that content on the viewing public.

Subliminal Auditory Self-help Tapes

When claims about covert advertising were raised in September 1957, the *New Yorker* lamented that "minds had been broken and entered" (Moore 1982). More than three decades later, claims of covert subliminal manipulation persist. Television commercials, magazine ads, and bookstores promote subliminal tapes that promise to induce dramatic improvements in mental and psychological health. These devices are ostensibly capable of producing many desirable effects, including weight loss, breast enlargement, improvement of sexual function, and relief from constipation.

Subliminal tapes represent a change in modality from visual to auditory, and now subliminal stimulation is supposedly being harnessed for a more noble purpose—psychotherapy, clearly a less crass objective than that of covert advertising. However, the scientific grounds for substantiating the utility of today's self-help tapes is as poor as was the documentation for advertising effects 30 years ago. Proponents seem to have assumed that for obtaining subliminal effects one modality is as good as another. Claims about the utility of subliminal tapes are essentially claims about the subliminal perception of speech—a phenomenon for which there is very little evidence (Moore 1988). The basic problem is that the few studies that purport to have demonstrated effects of subliminal speech used such crude methods for defining subliminality that the findings are quite uninteresting (e.g., Henley 1975; Borgeat et al. 1985).

It is not obvious what the analogue to visual masking is for a speech signal. Masking, in the visual domain, is procedurally defined with relative precision. The mask does not mutilate or change the target stimulus—it simply limits the time available for perceiving the preceding target. In the absence of the mask, the target is easily perceived. In the auditory domain, the target signal is reduced in volume and further attenuated by the superimposition of other supraliminal material. Often the subliminal "message" is accelerated or compressed to such a degree that the message is unintelligible, even when

"Neither Theoretical Foundation Nor Experimental Evidence"

The committee's review of the available research literature leads to our conclusion that, at this time, there is neither theoretical foundation nor experimental evidence to support claims that subliminal self-help tapes enhance human performance. . . .

Several sociopsychological phenomena, including effort justification and expectancy or placebo effects, may contribute to an erroneous judgment that self-help products are effective, even in the absence of any actual improvements in emotion, appearance, attitude, or any other physical or psychological quality.

—*In the Mind's Eye,*
Committee on Techniques for the Enhancement of Human Performance, National Research Council (National Academy Press, Washington, 1991, pp. 15-16).

supraliminal. It is an extraordinary claim that an undetectable speech signal engages our nervous system and is perceived—consciously or not. Signal detection is an implicit sine qua non of most theories of speech perception (Massaro (1987). To assert that "subliminal speech" is unconsciously perceived appears to call into question some very fundamental principles of sensory physiology. What is the nature of the signal that arrives at the basilar membrane? If the critical signal is washed out or drowned out by other sounds, then on what basis are we to suppose that the weaker of the two signals becomes disentangled, and comprehensible?

The tapes also have a dubious conceptual rationale in their assumed therapeutic impact. Even if the message could achieve semantic representation, how or why should it affect motivation? Answering the question "How?" is important, because it provides the theoretical justification for the practice.

> There are subliminally embedded messages at work. You won't be able to hear them consciously. But your subconscious will. And it will obey. [Zygon]
>
> To gain control, it is necessary to speak to the subconscious mind in a language that it comprehends—we have to speak to it subliminally. [Mind Communications Inc.]

Is there a pipeline to the id? Can we sneak directives into the unconscious through the back door? There may be a fundamental misconception at work here, consisting of equating unconscious perceptual processes with the psychodynamic unconscious (Eagle 1987; Marcel 1988). Cognitive psychologists use the term *unconscious* to refer to perceptual processes and effects of which we have no phenomenal awareness. Induced movement is an example of an unconscious perceptual process. Tacit knowledge of and conformity to grammatical rules is another example of unconscious pro-

cessing. No one would want to argue, however, that either of these domains of activity have anything to do with the psychodynamic unconscious. Psychodynamic theorists use the term *unconscious* as a noun with a capital U, to refer to, for lack of a better term, the id—"a cauldron full of seething excitations," as Freud expressed it. Because semantic activation without conscious awareness can be demonstrated, some observers have jumped to the conclusion that subliminal stimulation provides relatively direct access to the id. This assumption has neither theoretical nor empirical support.

While tape distributors often claim that their products have been scientifically validated, there is no evidence of therapeutic effectiveness (e.g., Auday et al. 1991; Greenwald et al. 1991; Merikle and Skanes, in press; Russell et al. 1991). In addition, both Merikle (1988) and Moore (1991a) have conducted studies that showed that many tapes do not appear to contain the sort of signal that could, in principle, allow subliminal perception to occur.

Quite apart from the lack of empirical support, there is little or no theoretical motivation for expecting therapeutic effects from such stimuli. The "explanation" consists of attributing to the systemic unconscious whatever mechanisms or processes would be logically necessary in order for the effects to occur. Because there is no independent evidence for such "unconscious" perceptual processes, it is not surprising that there is no evidence for the imputed effects (see Eich and Hyman 1991; Moore 1991b). Furthermore, Greenwald (in press) has recently queried the conventional psychoanalytic conception of a sophisticated unconscious processor, arguing that it is neither theoretically necessary nor empirically substantiated.

The burden of proof of the viability of these materials is on those who are promoting their use. There is no such proof, and therefore the possibility of health fraud could be raised. These tapes sometimes sell for as much as $400 a set. Of even greater concern is the fact that legitimate forms of therapy may go untried in the quest for a fast, cheap "cure."

According to William Jarvis, president of the National Coalition Against Health Fraud, a quack is "anyone who promotes, for financial gain, a remedy known to be false, unsafe, or unproven" (Jarvis 1989: 4). Fraud, on the other hand, implies intentional deception. Consequently, not all quackery is fraud, nor is fraud synonymous with quackery. As Jarvis has pointed out, in some ways quacks may be *worse* than frauds. "The most dangerous quacks are the zealots who will take the poison themselves in their enthusiasm for their nostrums. Sincerity may make quacks more socially tolerable, but it goes far in enhancing their danger to the public" (Jarvis 1989: 4).

Scientists, the Media, and the Popularization of Science

The popularity and interest in the topic of subliminal influences—both inside and outside academic circles—can be attributed, in part, to media coverage (c.f., Pratkanis, this issue). Conspiracy theories make good copy, and in subliminal advertising we have a large-scale technological conspiracy to control people's minds with invisible stimuli. With subliminal tapes you can allegedly change your behavior and your personality in profound and important ways—effortlessly and painlessly. The quick fix of psychotherapy is an intriguing notion. It is therefore small wonder that it con-

tinues to be a popular topic for writers.

Carl Sagan (1987) has suggested that pseudoscience flourishes because the scientific community does a poor job of communicating its findings. To propose that we can be influenced in dramatic ways by undetectable stimuli is a remarkable claim with little scientific support, but blaming journalists for promulgating the claim absolves the scientific community from any responsibility in the educational process. Relations between scientists and the press could be improved if scientists communicated more clearly. Researchers take such great pains to avoid making absolute pronouncements that they often err in the opposite direction. We sometimes speak with a tentativeness that belies the facts, understating our confidence that some propositions are true and that others are false (Rothman 1989). When we talk to the press, we need to speak plainly. For example, Phil Merikle recently observed that "there's unanimous opinion that subliminal tapes are a complete sham and a fraud" (Rae 1991). Merikle is correct, but such candor is relatively rare. Who will distinguish science from pseudoscience if not the scientists?

Paradoxically, while negative scientific evidence continues to accumulate, the subliminal-tape industry—fueled by aggressive advertising campaigns—thrives. As Burnham (1987) has noted, advertising's authority often derives from the use of scientific regalia. Advertising's purpose is, however, antithetical to that of science: "Advertisers [are] engaged in remystifying the world, not demystifying it" (Burnham 1987: 247). Extraordinary claims, if they are repeated often enough, can perpetuate extraordinary beliefs. When nonsense masquerades as science and magic is diguised as therapy, the result

"Quite apart from the lack of empirical substantiation, there is little or no theoretical motivation for expecting therapeutic effects from such stimuli."

is not always laughable. Consider the self-help tape for survivors of sexual abuse; the user is informed that lasting relief from the trauma of abuse is contingent upon the victim's acknowledgment of their own role in causing the abuse in the first place (Moore 1991b).

Conclusion

Subliminal advertising and psychotherapeutic effects from subliminal tapes are ideas whose scientific status appears to be on a par with wearing copper bracelets to cure arthritis. Not even the most liberal speculations regarding the use of subliminal techniques for "practical" purposes impute any potential utility to these practices (Bornstein 1989). The interesting question to ask is not "Do subliminal advertising techniques or subliminal auditory tapes work?" but, rather, "How did these implausible ideas ever acquire such an undeserved mantle of scientific respectability?" The answer involves a complex interplay of public attitudes toward science, how social science is popularized in the mass media, and how the scientific community communicates to those outside the scientific community. Carl Sagan may be right—pseudoscience *will* flourish if scientists don't take more responsibility for the accurate dissemination of scientific information.

According to Burnham (1987), superstition has triumphed over rationalism and skepticism partly because scientists no longer engage in the popularization of science—summarizing, simplifying, and translating scientific findings for lay audiences. The function of popularizing science and health is now carried out by journalists and educators. Consequently, many topics, including this one, receive coverage that is, at best, deficient in background information and meaningful context, and at worst, fragmented and misleading. Further confusion is caused by the tendency among journalists to manufacture controversies where none exists by juxtaposing the pronouncements of "authorities" who contradict one another. If all authorities (including those with financial stakes in their positions) are equally admissible, controversies abound.

Note

I am grateful to Phil Merikle and Anthony Pratkanis for comments on an earlier draft of this paper, portions of which were presented to the American Speech and Hearing Association's annual convention in St. Louis, November 18, 1989, to the American Psychological Association's annual convention in Boston, August 12, 1990, and to the annual convention of the Committee for the Scientific Investigation of Claims of the Paranormal, Berkeley, Calif., May 2, 1991. Inquiries should be directed to Timothy E. Moore, Department of Psychology, Glendon College, York University, 2275 Bayview Ave., Toronto, Ont. M4N 3M6. E-mail: GL2500020@YUVENUS.

References

Auday, B. C., J. L. Mellett, and P. M. Williams. 1991. "Self-improvement Using Subliminal Self-help Audiotapes: Consumer Benefit or Consumer Fraud?" Paper presented at the meeting of the Western Psychological Association, San Francisco, April.

Borgeat, F., R. Elie, L. Chaloult, and R. Chabot. 1985. Psychophysiological responses to masked auditory stimuli. *Canadian Journal of Psychiatry*, 30:22-27.

Bornstein, R. F. 1989. Subliminal techniques as propaganda tools: Review and critique. *Journal of Mind and Behavior*, 10:231-262.

Burnham, J. C. 1987. *How Superstition Won and Science Lost: Popularizing Science and Health in the United States.* New Brunswick, N.J.: Rutgers University Press.

Cheesman, J., and P. M. Merikle. 1986. Distinguishing conscious from unconscious perceptual processes. *Canadian Journal of Psychology*, 40:343-367.

Creed, T. L. 1987. Subliminal deception: Pseudoscience on the college lecture circuit. SKEPTICAL INQUIRER, 11:358-366.

Eagle, M. 1987. "The Psychoanalytic and the Cognitive Unconscious." In *Theories of the Unconscious and Theories of the Self*, edited by R. Stern. Hillsdale, N.J.: Analytic Press.

Eich, E., and R. Hyman. 1991. Subliminal self-help. In *In the Mind's Eye: Enhancing Human Performance*, edited by D. Druckman and R. Bjork. Washington, D.C.: National Academy Press.

Eriksen, C. W. 1960. Discrimination and learning without awareness: A methodological survey and evaluation. *Psychological Review*, 67:279-300.

Greenwald, A. G. In press. New look 3: A paradigm shift reclaims the unconscious. *American Psychologist.*

Greenwald, A. G., E. R. Spangenberg, and J. Eskenazi. 1991. Double-blind tests of subliminal self-help audiotapes. *Psychological Science*, 2:119-122.

Henley, S. 1975. Cross-modal effects of subliminal verbal stimuli. *Scandinavian Journal of Psychology*, 16:30-36.

Jarvis, W. 1989. What constitutes quackery? *NCAHF Newsletter*, 12(4):4-5.

Key, W. B. 1973. *Subliminal Seduction.* Englewood Cliffs, N.J.: Signet.

———. 1976. *Media Sexploitation.* Englewood Cliffs, N.J.: Prentice-Hall.

———. 1980. *The Clam-Plate Orgy.* Englewood Cliffs, N.J.: Prentice-Hall.

———. 1990. *The Age of Manipulation: The Con in Confidence, the Sin in Sincere.* Englewood Cliffs, N.J.: Prentice-Hall.

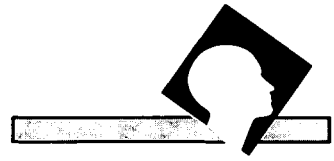
Leiss, W., S. Kline, and S. Jhally. 1986. *Social Communication in Advertising.* Toronto: Methuen.

Marcel, A. J. 1988. "Electrophysiology and Meaning in Cognitive Science and Dynamic Psychology—Comments on 'Unconscious Conflict: A Convergent Psychodyamic and Electrophysical Approach.'" In *Psychodynamics and Cognition*, edited by M. J. Horowitz. Chicago: University of Chicago Press.

Subliminal Tapes: How to Get the Message Across

BRADY J. PHELPS and MARY E. EXUM

Pseudoscience is alive and well. One reason for this is that members of the scientific community do a poor job of communicating their arguments and findings (Sagan 1987). In publicizing criticisms of pseudoscience, scientists may actually cause those sympathetic to pseudoscience to stop listening (Kurtz 1988). Furthermore, members of the scientific community and adherents of pseudoscience do not share much common ground. They do not use the same methods or have the same understanding of the importance of rigorous scientific procedures. They do not share a similar scientific language (or at least the same referents to the words used), and they do not use the same journals to communicate their findings. Most important, scientists and pseudoscientists have vastly different backgrounds, different reasons and motivations for conducting and publicizing their respective findings, and very different audiences.



Scientists should adopt the role of consumer watchdogs and consumer educators about subliminal tapes and other pseudosciences.

One who identifies as a scientist and conducts scientific research regularly is usually associated with an institution of higher learning or a research center devoted to specific types of issues. Such a person may hold a doctorate or master's degree from a university whose goal, in part, has been to teach how to conduct sound, replicable research with clearly defined independent and dependent variables and with minimal interference from confounding extraneous variables. A graduate from a research program presumably has learned to value the scientific process. Association with a reputable institution helps to ensure that

The "Subliminal Tapes" ad appeared in *New Age* magazine (January/February 1992); the other two were in *Omni* (November 1991).

researchers conduct and publish work that meets the scientific standards of that institution. Scientists usually do not make money from their research findings. They may earn prestige among other scientists and may receive benefits for writing successful grants. A scientist typically does not have the time, knowledge, or motivation to engage in the marketing of a finished product for mass consumption.

"Pseudoscientists" usually do not assign this label to themselves. Rarely does one say "Hello, I'm a pseudoscientist from Brand X Institute [or, I am just freelancing]. Please make that distinction. I'm a *pseudo*scientist, not a scientist." The problem arises when a person promotes unscientific findings as scientific and attempts to get others to behave in accord with the findings as though they had been obtained in a scientific manner. To lend credence to their findings, some pseudoscientists may establish a prestigious-sounding organizational name to which benefactors can make donations. Those who mislead people by labeling unscientific research findings as scientific tend to incite scientists to call them "pseudoscientists" and to call those they deceive "gullible believers in nonsense."

The name-calling and arguments typically take the form of attack and ridicule. But what is the forum for these interchanges? Given that scientists and pseudoscientists travel in different circles, the scientific viewpoint needs to be presented in the arena where pseudoscience finds its believers, that is, in everyday forms of information dissemination. A letter to the editor may not be published, or if published it may not be read. Asking a newspaper to cover the scientific position of a sensationalized pseudoscientific finding may be helpful if reports of both positions are published at the same time, which assumes you have advance notice of

such stories. Countering paid advertising by pseudoscientists with paid advertisements for the validity and superiority of the scientific method is possible, but not probable, since pseudoscientists run advertisements to make money and scientists would be paying for an ad to keep people from wasting money. However, a common means of communicating information is through day-to-day conversation. Personal testimonials are a powerful form of persuasion.

But why would believers in commercial pseudoscientific products want to hear what we have to say? They wouldn't, unless we as scientists can offer something of more value and utility than the pseudoscientists do. We suggest that if scientists were to adopt the role of consumer watchdogs and consumer educators, more people would be likely to listen.

Among the most widely marketed pseudoscience products today are "subliminal" tapes. These tapes, which their manufacturers claim will provide quick, effortless solutions for many personal problems, can be found virtually anywhere. They are even advertised in publications devoted to promoting science, such as *Discover* magazine. Although such tapes are ubiquitous, there is a lack of empirical evidence for any effectiveness beyond that of a "placebo" effect (Glover 1979; Dutto and Galli 1982; Treimer and Simonson 1986). Psychology, the scientific discipline supposedly devoted to the explanation of human behavior, has had little success in disputing the viability of such products (Anastasi 1964; Dudley 1987; Goldiamond 1966; Moore 1982, 1985; Saegert 1987; Schulman 1981). Part of psychology's lack of success in countering the claims for these products may be attributed to points made earlier concerning communication problems and the motivation of the proponents.

As is well known, subliminal tapes typically have an audible side, on which the message is clearly present. On the opposite side, however, all one typically hears is subdued music intended to "lull the listener into relaxation wherein the subliminal messages can work." Of course one can't hear the message, only the music. It is at this point that a scientist may suggest that it is impossible for a weak stimulus to compete successfully against more powerful stimuli (Dixon 1971) for either selective attention or control of behavior. Unfortunately, while this logic may be perfectly obvious to us, many subliminal subscribers would now stop listening to the scientist.

How to continue the conversation at this point depends upon your time and patience as well as your motivation to educate or irritate. You may decide to assume the message is there and ask the proponent or salesperson why we can't hear it. Predictably, the answer will be that the message only interacts with the unconscious mind without our awareness. Now you counter that whether the message works with the unconscious or the conscious mind, such a message still needs to impinge on the nervous system through auditory receptors. So why can't our ears hear the message?

Most often, the proponent will say either that the message has been increased to such a high frequency that it is beyond our range of perception or that it is at too low a frequency or volume, but that it certainly is there. Such a reply acknowledges that the message is beyond the range of human auditory perception! If you then raise that point, ironically the subliminal proponent will agree. You might now ask if a dog or a bat could hear the message. We have, in fact,

received affirmative answers to this question from clerks intent on sales. Our next question has been, of course: Can these tapes help my dog lose weight, or help my bat to develop a more positive self-esteem? At this point, we have been asked to leave the store, had the phone suddenly disconnected, or found fellow customers laughing as the ludicrous nature of subliminal tapes became apparent. But such an approach does little to teach people to engage in scientific thinking or to become discriminating, thoughtful shoppers.

Actually, the messages on subliminal tapes can't be heard because they are in fact not there. Merikle (1988) conducted a spectrographic analysis of several subliminal audiotapes and found no evidence for the presence of any identifiable speech sounds. If you were to present this data to the subliminal subscribers, they would stop listening, because they prefer to believe individual testimonials. They choose to believe something, anything, that will offer them even the hope of relief from their problems.

Instead of a direct confrontation, one might ask them if they can think of alternative hypotheses to account for any beneficial effects of such tapes. Remember, the intended message is audible on one side. Presumably people will listen to the audible side at least once so they will know what it is they are supposed to hear on the subliminal side. After hearing the message, when they subsequently listen to the inaudible side they may rehearse to themselves what they are supposed to be hearing. Even if they do not listen to the audible side, the label on the tape will prompt them to think about what it is they want changed and how they might achieve those changes. Your providing plausible reasons for the positive results from the testimonials may help demystify the operation of such tapes. In addition, it may be helpful to point out that 30 testimonials from 30 people would be vastly different from 30 testimonials from among 500 people. In other words, how many negative or neutral outcomes were there?

You may also question the high cost of the tapes and explain that paying a lot for a product makes one more likely to persist in believing that there are qualities for success residing in the product's use. You may question the bottom-line motivation and qualifications of the seller and the product researcher. You may inquire about the consumer's knowledge of the scientific method and offer to fill in missing facts. You should use commonly understood examples of consumer safety and the rigorous testing most products must pass depending upon the category of the product. For example, why must a tire for a car meet higher testing standards than a pressurized tire for a toy? If a product can be marketed without passing rigorous tests, how effective can it be, and what kind of product can it be? There is a big difference between testing that proves a product does not cause harm and testing that proves that a product actually has a beneficial effect.

In addition to all of the above, depending on your ability to be personable and patient, you need to be able to offer people alternatives for solving their problems other than buying subliminal tapes, resorting to drugs, or joining the latest New Age fringe group. What do you have to offer them in the way of incorporating scientific thinking and principles into their lives to help better solve their problems? First, one might try to convince them that there are no quick and painless solutions for maladaptive behaviors or thought patterns that

have developed over many years. Part of this involves warning them about charlatans who in order to make a quick profit encourage the belief that there are quick cures. Effective and lasting behavior-changing of any kind actually involves concentrated effort, also called work, and adherence to certain data-based prescriptive guidelines. Second, people need reassurance that they can solve their problems by resorting to the use of professional, legitimate, and scientifically supported materials and personal commitment. Low-cost self-help groups based on scientific principles are always a viable option. Third, you need to try to convince them that learning some basic, logical, scientific principles, and how to define problems objectively, will help them solve future problems or avoid them altogether.

Finally, as a result of these actions, you will demonstrate that scientists are concerned about their fellow human beings and that they want to share scientific knowledge where the impact is greatest. If a scientist only applies the scientific method in his or her research and is not able or willing to share the applicability of this method for solving everyday human problems, then there is little ground to argue with the pseudoscientists, who are more than happy to fill the void.

References

Anastasi, A. 1964. "Subliminal Perception." In *Fields of Applied Psychology*, edited by A. Anastasi. New York: McGraw-Hill.

Dixon, N. F. 1971. *Subliminal Perception: The Nature of a Controversy*. London: McGraw-Hill.

Dudley, S. 1987. Subliminal advertising: What is the controversy about? *Akron Business and Economic Review*, 18:6-18.

Dutto, F. N., and N. Galli. 1982. The effects of noxious subliminal suggestion upon smoking atttitudes and behavior. *EDRS*, Document #ED 217 359.

Glover, E. D. 1979. Decreasing smoking behavior through subliminal stimulation treatments. *Journal of Drug Education*, 9:273-283.

Goldiamond, I. 1966. "Statement on Subliminal Advertising." In *Control of Human Behavior*, vol. 1, edited by R. Ulrich, T. Stachnik, and J. Mabry. Glenview, Ill.: Scott Foresman.

Kurtz, P. 1988. Skeptic's burnout: Hard weeks on the astrology battle line. SKEPTICAL INQUIRER, 13:4-6.

Merikle, D. M. 1988. Subliminal auditory messages: An evaluation. *Psychology & Marketing*, 5:355-372.

Moore, T. E. 1982. Subliminal advertising: What you see is what you get. *Journal of Marketing*, 46:38-47.

———. 1985. Subliminal delusion. *Psychology Today*, May, pp. 9-10.

Sagan, C. 1987. The burden of skepticism. SKEPTICAL INQUIRER, 12:38-46.

Saegert, J. 1987. Why marketing should quit giving subliminal advertising the benefit of the doubt. *Psychology & Marketing*, 4:107-120.

Schulman, M. 1981. The great conspiracy. [Review of "The Clam Plate Orgy."] *Journal of Communication*, 31:209.

Treimer, M., and M. R. Simonson. 1986. "Old Wine in New Bottles: Subliminal Messages in Instructional Media." Paper presented at the Annual Convention of the Association for Educational Communications Technology, Las Vegas, Nev.

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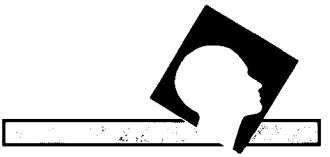
The Avro VZ-9 'Flying Saucer'

WILLIAM B. BLAKE

The claims that the U.S. government recovered "crashed flying saucers" in 1947, together with the many "UFO" sightings since that date, raise an interesting question. Did the United States ever attempt to build and fly a manned flying saucer? The answer is yes. In the 1950s the U.S. funded Avro Aircraft Limited of Canada to build a saucer-shaped craft. What follows is a summary of that effort from historical records, including once "secret" photos of an experimental Avro saucer and other concepts for saucer-shaped craft. Because of serious, intrinsic stability problems, the U.S. Air Force/Army flying-saucer effort ended in failure a quarter-century ago.



Did the U.S. ever attempt to build and fly a manned flying saucer? The answer is yes.

In 1952, Avro Aircraft Ltd., located near Toronto, began a design study for a supersonic fighter-bomber airplane with a circular wing. The study was funded by a $400,000 contract from the Canadian government. The vehicle was intended to take off and land vertically, like a helicopter. The idea was to duct the jet exhaust to form a peripheral curtain of air underneath the vehicle. This would create a cushion of air on which the vehicle could "float." To transition from hover to high-speed flight, the jet exhaust would slowly be directed aft. Lift would be provided by the circular wing.

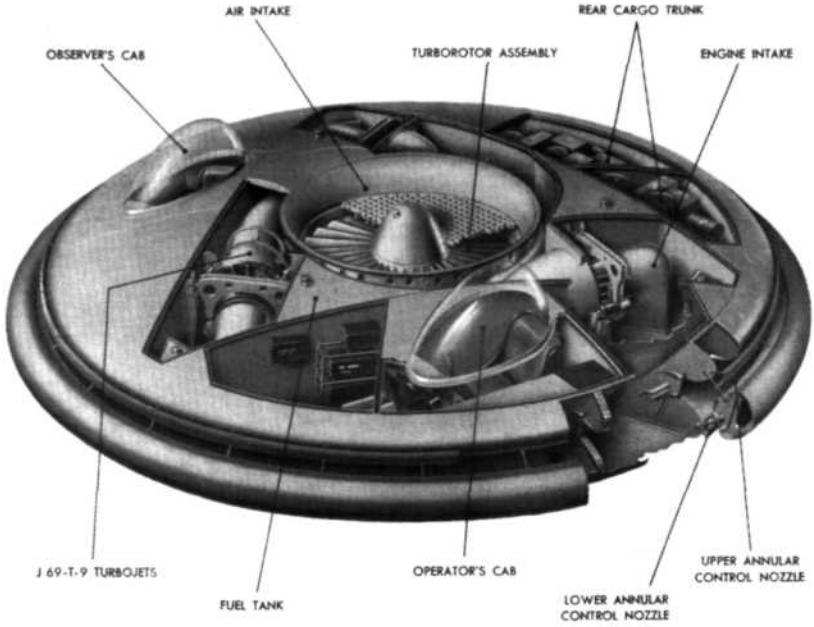
After the initial contract, the Canadian government abandoned the project as being too costly. Enough progress had been made, however, to interest the U.S. government. In July 1954, the first of two Air Force contracts totaling $1.9 million was awarded to Avro for further study. Avro added $2.5 million of company funds to the effort and completed a series of design studies and small-scale tests on a vehicle designated the P.V. 704 (U.S. designation, System 606A). The 606A design was

Artist's conception, formerly "secret," of Project 1794, an early Avro design for saucer-shaped manned flying disks.

almost 30 ft. in diameter with a maximum weight of 27,000 lbs. and design speed over 1,000 mph.

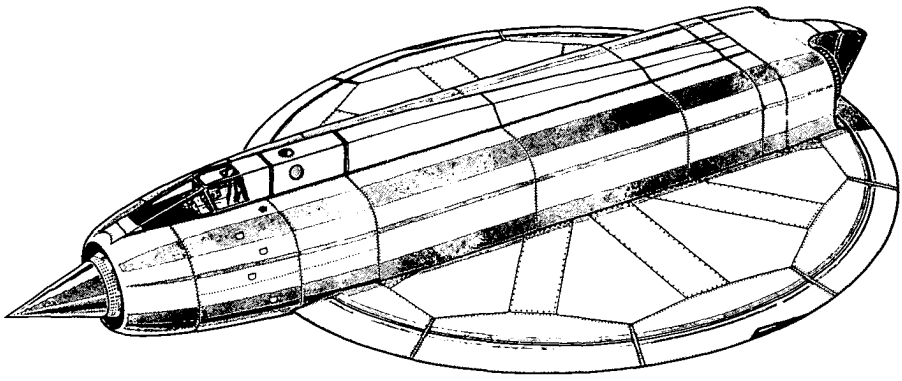
The Army became interested in the circular-wing concept and convinced the Air Force to redirect its effort in 1958. The Army felt that the circular wing could fit in with its plans to develop a "flying jeep" for improved battlefield survivability. The Air Force agreed because it felt a small, subsonic research vehicle could be used to demonstrate the design features of the 606A concept in a shorter time with much lower costs. The resulting craft was named Avrocar and given the Army designation VZ-9AV (ninth in a series of vertical take-off research aircraft). Most of the VZ-series aircraft looked like props from a James Bond movie.

The Avrocar was a saucer-shaped disk 18 ft. in diameter and 3 ft. thick. It was designed to go 300 mph and



Cutaway drawing of the Avrocar vehicle, a saucer-shaped disk 18 feet in diameter, showing separate cockpits for two crew members.

Photograph, formerly classified "secret," of the Avrocar Test Vehicle. Its first untethered flight, November 12, 1959, revealed serious instability problems that were never solved.



A design for a circular-wing fighter-bomber that was never built.

fly to an altitude of 10,000 ft. It weighed 5,650 lbs. and had separate cockpits for two crew members. Power was provided by a centrally located fan with a diameter of 5 feet. This was driven by the exhaust from three Continental J-69 turbojet engines. The flow from the fan was ducted to the periphery of the planform. An adjustable ring along the periphery was used to control the direction of the thrust. Two full-scale vehicles were built and were rolled out of the factory in May and August of 1959.

Ground tests of the full-scale propulsion system revealed there was not enough thrust available for hover out of the presence of the ground cushion. This was the first major problem with the program. The primary causes were large losses due to the complicated ducting of the flow and high internal temperatures that degraded the performance of the J-69s. All that could be done was to study the usefulness of the Avrocar as a ground-effect machine. At this point, the first Avrocar was sent to NASA Ames, Moffett Field, California, for wind-tunnel testing. Only here could its potential for forward flight (away from the ground) be assessed. The second vehicle remained at Avro for flight testing.

The first flight occurred on September 29, 1959. The Avrocar was tied to the ground for safety purposes. This flight lasted only 12 seconds, while the machine wobbled like a giant tiddlywink. The first untethered flight occurred on November 12, 1959. These initial flights revealed a second major problem. At a height of 3 feet above the ground, uncontrollable pitching and rolling motions were encountered. The motion was termed *hubcapping*. The problem resulted from an erosion of the ground cushion as height was increased. Flight above this height was impossible.

Two formal Air Force flight evaluations were conducted at Avro, in April 1960 and June 1961. During these tests, the vehicle reached a maximum speed of 35 mph. All attempts to control the "hubcapping" were unsuccessful. Meanwhile, the Ames wind-tunnel tests had shown that the VZ-9 had insufficient control for high-speed flight and was aerodynamically unstable. The addition of a conventional horizontal tail did not improve the situation. Thus, even if it could escape the ground cushion, the Avrocar would be unable to sustain high-speed flight.

Because the technical problems

were insurmountable, the program was terminated in December 1961. A total of $10 million had been spent. One VZ-9 was scrapped; the other was given to the Smithsonian Institution. It now resides at the Smithsonian Air & Space Museum Annex in Silver Hill, Maryland.

The VZ-9 was the most ambitious flying-saucer research program, but not the only one. Many ground-cushion vehicle designs of the 1960s were saucer-shaped. The Convair Division of General Dynamics designed a 459-ft.-diameter vehicle with a gross weight of 4 million lbs. This monster was intended to span the oceans for naval operations. A nuclear reactor would provide the 150,000 hp necessary for operation. Obviously, it was never built. The remnants of these early efforts can be seen crossing the English channel today. Modern hovercraft use the same ground-cushion effect that gave early impetus to the flying-saucer research projects.

Source Material

Genesis of the program:

Avro Aircraft Limited, 1959 (declassified 1971). *Pre-phase I Part 1 and Part 2 Development Program—VTOL Supersonic Aircraft.*

Technical aspects:

Avro Aircraft Limited, 1959 (declassified 1971). *The Avrocar Design.*

Greif, R. K., and W. H. Tolhurst, Jr. 1963. *Large Scale Wind-Tunnel Tests of a Circular Plan-Form Aircraft with a Peripheral Jet for Lift, Thrust, and Control.* NASA Technical Note D-1432.

Lindenbaum, B. L. 1990. *Historical Notes #9—Avrocar. Revolutions,* vol. 1, no. 6, published by the Archimedes Rotorcraft and V/STOL Museum, Brookville, Ohio.

Murray, D. C. 1990. *The AVRO VZ-9 Experimental Aircraft—Lessons Learned.* Presented at the AIAA Design, Systems, and Operations Meeting, September 1990, Dayton, Ohio.

Demise of the program:

Deckert, Lt. W. H., and Maj. W. J. Hodgson. 1962. *Avrocar Flight Evaluation.* Air Force Flight Test Center Report FTC-TDR-61-56, January.

Although it contains minor errors, the best generally available technical summary of the VZ-9 effort is given in:

Rogers, M. 1989. *VTOL Military Research Aircraft.* New York: Orion Books.

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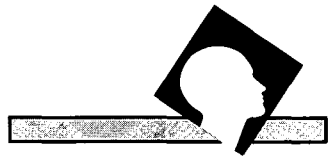
Two 19th-Century Skeptics

Augustus De Morgan and John Fiske

MILTON A. ROTHMAN

There were skeptics before CSICOP, and enthusiastic debunkers of pseudoscience existed even before Martin Gardner and L. Sprague de Camp began their honorable careers. In this article I would like to focus on two prominent nineteenth-century scholars who wrote extensively on the side of reality and reason but who are now somewhat forgotten. Reading their inquiries and exposures provides some valuable perspectives on the crank literature of today.



Two skeptical inquirers into the paradoxers, cranks, crotchets, and eccentric literature of their time show us that not very much has changed.

Augustus De Morgan (1806-1871)

Augustus De Morgan was an English mathematician, educated at Cambridge and superior in mathematical ability to any of his class. He was a voracious reader and dabbled in philosophy and religion, but he refused to become a member of any particular church, calling himself a "christian unattached." After finding the study of law too unpalatable, he was elected the first professor of mathematics at the newly formed University of London. He was a popular lecturer and is described as having "a quaint humour, and a thorough contempt for sham knowledge and low aims in study."[1]

De Morgan wrote extensively in mathematics and logic, but is perhaps best remembered for his book *A Budget of Paradoxes*, a delightful and sometimes hilarious account of his dealings with sundry characters he called "paradoxers."[2] To understand the title of the book we must take into account certain changes in the English language that have taken place since 1872. A glance into the *Oxford English Dictionary* informs

us that the word "budget" has as its first meaning a "pouch, bag, or wallet, usually of leather." In the third meaning given, the word has evolved to "the contents of the pouch." Then we find that "Budget" is often used as the title for a journal, such as *The Pall Mall Budget*. This seems to be the meaning we are looking for. A budget of paradoxes is a journal or collection of paradoxes. We need only to make sense of "paradoxes." In the present era we are used to thinking of a paradox as a set of contradictions. However, the first definition in the *OED* is closer to the meaning that applies here: *A paradox is a marvelous or incredible belief which is at odds with established truth.* Indeed, it is the opposite of "orthodox," making it almost identical to what we would call "paranormal."

A paradoxer, then, is a person with beliefs so unorthodox that he or she could be called a crank or crackpot if we wanted to be unkind. It might be worthwhile to resurrect the term, for there is no other word in the language that carries the same meaning without being libelously pejorative. Another archaic term used by De Morgan and also worth resurrecting is the word "crotchet," which refers to an obsessive belief or preoccupation carried about by a paradoxer.

The crotchets that interested De Morgan were mathematical. Since he was a well-known mathematician, he frequently received letters from paradoxers touting their pet theories. Most scientists receive occasional letters of this nature and toss them into the round file after getting a laugh out of them. De Morgan, on the other hand, saved hundreds of letters and incorporated them into his book, adding his own humorous and sometimes caustic comments.

There were three major crotchets that obsessed De Morgan's paradoxers. These were the classical mathematical problems called "squaring the circle," "trisecting the angle," and "duplicating the cube." In brief, the problems are as follows:

1. Squaring the circle means finding a circle whose area is exactly equal to that of a given square.

2. Trisecting the angle means dividing any given angle into three exactly equal parts.

3. Duplicating the cube means constructing a cube whose volume is exactly double that of a given cube.

All of these problems are to be solved geometrically, using only a straightedge and compass.

When these problems originated in Greece, two millennia ago, there was no reason to believe that major obstacles stood in the way of their solution. It was not until late in the nineteenth century that modern mathematics proved rigorously that no solutions to the three problems exist. It is not just that the solutions are too complex or difficult. The fact is that the three operations described are mathematically *impossible.* The first problem is related to the task of finding an exact value for the number π (3.14159.....), which as we now know is a transcendental number, a number with decimals that go on without end. The third problem involves finding the cube root of 2, which cannot be done geometrically with ruler and compass. (For more details see Kasner and Newman.[3])

Of course, whenever you say that something is impossible, it is like waving a red flag in front of a bull. To the dedicated paradoxer nothing is impossible. The consequence is that the lives of men with little real knowledge of mathematics are spent writing papers and letters and pamphlets, filling them with their illusory "proofs" that the circle really can be squared and the angle trisected. The number π and its associated problems has caused more crankiness than any other entity in mathematics. (In 1887 the Indiana legislature was almost persuaded to define the value of π by law. The bill was actually passed by the House, but fortunately a proper mathematician came along and in the nick of time persuaded the Senate to defeat it.[4])

The value of *A Budget of Paradoxes* lies not merely in De Morgan's tilting at mathematical cranks, but in his detailed history of crankery of all types, his diversions into numerology, the history of and sundry curiosities relating to π, and his mathematical discussions of the reasons for considering circle-squaring and so on to be paradoxes.

The flavor of his style can be seen in the opening paragraph of the book's introduction:

> If I had before me a fly and an elephant, having never seen more than one such magnitude of either kind; and if the fly were to endeavor to persuade me that he was larger than the elephant, I might by possibility be placed in a difficulty. The apparently little creature might use such arguments about the effect of distance, and might appeal to such laws of sight and hearing as I, if unlearned in those things, might be unable wholly to reject. But if there were a thousand flies, all buzzing, to appearance, about the great creature; and, to a fly, declaring, each one for himself, that he was bigger than the quadruped; and all giving different and frequently contradictory reasons; and each one despising and opposing the reasons of others—I should feel quite at my ease. I should certainly say, My little friends, the case of each one of you is destroyed by the rest. I intend to show flies in the swarm, with a few larger animals, for reasons to be given.

Later on he admits to a certain combativeness, for reasons given by a certain Colonel Quagg (who might be identified by a reader more expert in English literature than I am), as follows: "I licks ye because I kin, and because I like, and because ye's critters that licks is good for!" In today's litigious atmosphere we skeptics feel constrained to be more polite toward our adversaries.

John Fiske (1842-1901)

John Fiske was the American counterpart of Augustus De Morgan. Although he is almost totally forgotten now, he was a very popular lecturer on history, philosophy, and science in his day. Fiske was born in Hartford, Connecticut, and at the age of eight wrote that he had then read about two hundred volumes, mostly on philosophy, chemistry, astronomy, grammar, mathematics, and "miscellaneous things."[5] By the age of 20 he could read in at least 12 languages. At Harvard, he aligned himself with the most advanced thinkers of the day in support of evolution—and this in 1862, when *Origin of Species* had just appeared in print. Whereupon the Harvard authorities threatened him with expulsion. In spite of this setback he managed to graduate in 1863. After a brief fling at the practice of law, he was hired by Harvard in 1869 to give a course of lectures on "The Positive Philosophy." Harvard's change of heart was occasioned by the election of Charles W. Eliot to president of the college. In 1872 Fiske was appointed assistant librarian of the college, a position he held for seven years. Soon after becoming librarian he published his first important book, *Myths and Myth-Makers* (now out of print), and was launched upon a busy career as a writer and lecturer.

One of Fiske's final publications was *A Century of Science*, a collection of essays, one of which is titled "Some Cranks and their Crotchets."[6] In this essay he relates that, when he was librarian at Harvard and trying to straighten out the card catalogue, he came across many books that seemed to be listed under the wrong categories. Why should a pamphlet on circle-squaring be listed under mathematics? Why should a tract describing a perpetual-motion machine be under physics? Why were crazy interpretations of the Book of Daniel grouped along with works of solid biblical scholarship? Clearly reform was necessary. Fiske proposed to group these crank publications under "Insane Literature." However, it was called to his attention that this appellation might hurt the feelings of certain living authors, so he decided to change the classification to "Eccentric Literature."

During the course of this reclassification project, Fiske became familiar with much of the eccentric literature of the day. In his case familiarity bred contempt. A feeling for his style and attitude can be gleaned from the following paragraph:

> Just where the line should be drawn between sanity and crankery is not always easy to determine, and must usually be left to soundness of judgment in each particular case, as with so many other questions of all grades, from the supreme court down to the kitchen. One of the most frequent traits of your crank is his megalomania, or self-magnification. His intellectual equipment is so slender that he cannot see wherein he is inferior to Descartes or Newton. Without enough knowledge to place him in the sixth form of a grammar school, he will assail the conclusions of the greatest minds the world has seen. His mood is belligerent; since people will not take him at his own valuation, he is apt to regard society as engaged in a conspiracy to ignore and belittle him. Of humour he is pretty sure to be destitute; an abounding sense of the ludicrous is one of the best safeguards of mental health, and even a slight endowment will usually nip and stunt the fungus growth of crankery.

Fiske then proceeds to survey the cranks and crotchets of the nineteenth century, beginning with De Morgan's

collection of circle-squarers and angle-trisecters. In 1833, a Captain Forman of the Royal Navy wrote against the law of gravitation and got no notice whatsoever. Perpetual motion and the infamous Keely motor are mentioned, as is a Captain Roblin of Normandy, who in 1861 ascertained the sites of sundry gold mines through his study of the zodiac and set forth a proposal for a stock company to dig and be rich. It is not mentioned how rich he became.

Quite a number of characters, unsatisfied with the conventional shape of the earth as determined by astronomers, proposed their own variations. Herr Johannes von Gumpach published in 1861 a pamphlet titled *A Million's Worth of Property and Five Hundred Lives Annually Lost at Sea by the Theory of Gravitation, A Letter on the True Figure of the Earth, Addressed to the Astronomer Royal.* Gumpach thought the earth was elongated rather than flattened at the poles. Others thought the earth was flat, and others thought that it was spherical but hollow, with large openings at the poles leading to the interior world. Captain John Cleves Symmes, a retired army officer living in St. Louis, achieved some fame between 1818 and 1829 by writing and lecturing on his hollow-earth theory. (Why are so many retired captains among the nineteenth-century paradoxers?) A Captain Wiggins was supposed to have visited the interior world, finding it inhabited by tall people with Roman noses who spoke Hebrew. (The inner world was a favorite destination for the Lost Tribes of Israel.)

Fiske then comments that "a favourite occupation of cranks is the discovery of hidden meanings in things," after which he proceeds to skewer sundry pyramidologists and numerologists. The presumed conquest of Mexico and South America by the Mongols receives some notice. The widespread presence of mastodon fossils was taken by many as evidence that the Mongol hordes had arrived in our hemisphere on the backs of elephants.

A fair amount of lunacy connected with religion comes under Fiske's lens. Edwin Johnson published a book in 1890 called *The Rise of Christendom,* according to which the rise of Christendom began in the twelfth century, preceded by two centuries of Hebrew religion, which started in Moslem Spain. Johnson asserted that what we believe to be the history of Israel as well as of the first eleven Christian centuries is a gigantic lie, concocted in the thirteenth century by the monks of St. Basil and St. Benedict.

There is also mention of the Bacon-Shakespeare lunacy, to which Fiske devotes an entire chapter titled "The Bacon-Shakespeare Folly." While many authors have tried to attribute Shakespeare's work to others, Fiske lays the beginning of the fad to Delia Bacon, a member of the distinguished Connecticut family. In *The Philosophy of Shakespeare's Plays Unfolded* (1857), she attempted to show that the plays of Shakespeare were actually written by Francis Bacon. The reasoning was that the plays show evidence of great erudition and scholarship, which the uneducated William Shakespeare could not have picked up on his own. Therefore someone else must have done it. The controversy over this matter has never died out, although Delia Bacon was unfortunate enough to die two years after the publication of her book, in a Hartford insane asylum.

Fiske dedicates several pages to a religious community in Petersham, Massachusetts, whose members believed that they were going to live forever because of their correct thinking and living, and also because

their leader, Father Howland, was the incarnation of the third member of the Trinity. This community was founded in the 1860s and carried on for a few decades. Its faith was unshaken by the first few deaths in the group, but when Father Howland himself died in a horse-and-buggy accident, "then a note of consternation mingled with the genuine mourning of the little community. It was a perplexing providence." However, faith prevailed, and the immortality myth began to be replaced by a resurrection myth. Fiske, from his own observations based on several visits, concluded that the members of this group "seemed polite and gentle in manner; their simple-mindedness was noticeable, and their ignorance was abysmal.... In the facial expression of every one I thought I could see something that betrayed more or less of a lapse from complete sanity." The group did not survive into the final decade of the nineteenth century.

We, now faced with the final throes of the twentieth century, are not unacquainted with the symptoms of mass hysteria and insanity. The more technology we inherit, the more technological becomes our crankery. Otherwise things remain pretty much the same. To savor the ripe tone of modern lunacy, let me recommend a modern bit of fiction that hilariously sends up every persuasion of paradoxer from Egypt to contemporary computerized numerologists. This book is *Foucault's Pendulum*, by Umberto Eco (reviewed in *SI*, Fall 1991). In this brilliant work Eco lays waste every occult cult in history, with particular attention paid to the Templars and the Rosicrucians, and with side sallies in the direction of the astrologers, the pyramidologists, and the numerologists.

Notes

1. *The Dictionary of of National Biography*, vol. 5, ed. by L. Stephen and S. Lee (London: Oxford University Press, 1921, 1967).

2. A. De Morgan, *A Budget of Paradoxes*, 2nd ed. (Chicago: Open Court, 1915; 1st ed., 1872). According to *Books in Print*, this book is now available in two volumes, as an Ayer Publishing Co. reprint, but at a price of $55.

3. E. Kasner and J. R. Newman, *Mathematics and the Imagination* (New York: Simon & Schuster, 1940; 2nd paperback ed., 1965).

4. P. Beckmann, *A History of π (pi)* (New York: St. Martin's Press, 1971).

5. *Dictionary of American Biography*, vol. 3, ed. by A. Johnson and D. Malone (New York: Scribner's, 1930, 1959).

6. J. Fiske, *A Century of Science and Other Essays* (Boston and New York: Houghton, Mifflin, 1989).

Milton A. Rothman, a retired physicist, is author of A Physicist's Guide to Skepticism *and* The Science Gap: Dispelling the Myths and Understanding the Reality of Science *(forthcoming).*

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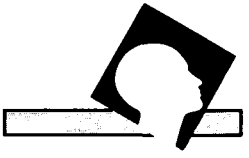

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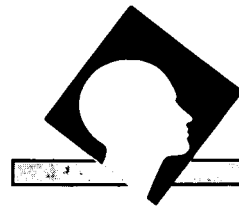

Archaeological Frauds and Wild Theories

The Davenport Conspiracy Revisited. By Marshall McKusick, Iowa State University Press, Ames, Ia., 1991. 189 pp. Cloth, $22.95.

Fantastic Archaeology: The Wild Side of North American Prehistory. By Stephen Williams. University of Pennsylvania Press, Philadelphia, 1991. 407 pp. Cloth, $28.95; paper, $14.95.

JOHN WHITTAKER

Archaeological frauds and wild theories about prehistory in America began early, reached a peak around the turn of the century, and remain popular today. Two new books describe some outstanding examples and illuminate their historical contexts. Both are nicely produced with clear illustrations, and are not too expensive.

Marshall McKusick's *Davenport Conspiracy Revisited* is the best case-study of an archaeological fraud I know. In 1877 the Reverend Jacob Gass began a series of dramatic finds in mounds in eastern Iowa. Tablets with inscriptions and stone pipes in the form of elephants purported to solve some of the major archaeological problems of the day: Where did the native inhabitants of America come from? Were the "mound builders" Indians? Were prehistoric humans in America associated with extinct fauna?

Any find that fits preconceptions so pleasingly should be examined with caution; in fact, the majority of scholars in the budding profession of anthropology were skeptical. However, there were enough supporters both locally and nationally to make the Davenport finds a source of bitter contention in the scientific circles of the day. As McKusick, associate professor of anthropology at the University of Iowa, unfolds a tale at once depressing and amusing, we come to know both the participants and the evidence with the immediacy of a good murder mystery. Gass was a member of the Davenport Academy of Science, a local amateur society typical of many. His initial archaeological work was not bad for its day, and his successes made him enemies. The evidence suggests that several fellow-members had created and planted his unusual finds, and others, apparently not in on the fraud, then supported it. In the process, the Academy was torn apart, as members on both sides voted friends in and out of office, threatened lawsuits, and accused their neighbors and colleagues

of fraud, perjury, and scientific incompetence.

The disgraceful doings at the Academy were all over a really pitifully transparent fraud. As McKusick shows, the contextual evidence and the artifacts themselves pointed quite unambiguously to a cheat even in 1877, and he describes as well the results of modern analyses, which even reveal the probable source of the roofing slate used for the tablets.

The present volume is an update of McKusick's 1970 *Davenport Conspiracy*, which he has rewritten for a wider audience. In part he was inspired to do so because pseudolinguist Barry Fell used the Davenport material in his *America B.C.: Ancient Settlers in the New World*. Fell provides a translation of the childish fake script on the tablets, claiming that it includes texts in Egyptian and Phoenician and not even citing McKusick's demonstration that the tablets are a fraud. (He also ignores the earlier voices of reason.)

Some of the same themes of the Davenport case are discussed in a larger history of "the wild side of American archaeology." *Fantastic Archaeology*, by Stephen Williams, Peabody Professor of American Archaeology and Ethnology at Harvard, is an overview of irrational ideas, eccentric characters, and deceptive practices in American archaeology, from the first speculations in the colonial days up to the current nuttery of the Fells and von Dänikens. Williams covers most of the major examples, such as the Davenport frauds, the Cardiff Giant, and the Kensington Runestone, and many that are less familiar. The cases and personalities are analyzed accurately and in detail, and Williams has investigated some himself and brings new ideas into play. He has a gentle humor that makes good reading.

Williams is especially good at providing the necessary background of more orthodox thought on American prehistory and of the religious and psychic connections of many of the crackpots, putting them in the historical context so necessary for understanding them. A final chapter gives a readable outline of American prehistory, which helps those with less prior knowledge understand why some of the fantastic archaeology is so wrong. The solid background and wide coverage are two of the book's strengths, but also make it rather long; it will therefore probably not be as attractive to the casual reader as Robert Waushope's short and delightful *Lost Tribes and Sunken Continents* (University of Chicago Press, 1962).

Even those who are not interested in archaeology per se will find both books illuminating on the nature of frauds in general. So many of the cases have the same outline: An idea or object is produced that "solves" a controversy or fits someone's preconceptions. Most scholars reject it, usually because it is absurd, unsupported, or an obvious fraud. A single strong supporter, often not the originator, works tirelessly to force it into the limelight. After contention, it is rejected except by the supporters, who almost always refuse to stop believing. All too often, believers are intelligent people with good credentials in some other field or previous good work to their credit. No matter how obvious the fraud and how thorough the debunking, many fantasies are revived by a new set of believers after a period of dormancy and copied, used, and perpetuated by other fringe thinkers.

We need more books like *Davenport Conspiracy Revisited* and *Fantastic Archaeology*. They show how frauds work, how science opposes them, and how they are produced by the social and intellectual context of their time.

Seeing the patterns helps us recognize and understand the new cases that appear every year.

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Seeking 'Resurrection' for Cold Fusion

Fire from Ice: Searching for the Truth Behind the Cold Fusion Furor. By Eugene F. Mallove. John Wiley, New York, 1991.

STEVEN N. SHORE

The cold-fusion controversy began with a press conference called on March 23, 1989, by B. Stanley Pons and Martin Fleischmann to announce the discovery of a new energy source unlike any previously observed in the laboratory. They claimed to have discovered room-temperature nuclear fusion. Their evidence was the production of excess heat from palladium rods immersed in a deuterated electrolyte, in this case water. They also claimed to have observed accompanying emission neutrons whose presence was signaled by emission of the 2.2 MeV gamma ray from neutron capture in the deuterated solution.

The press conference, unconventional though it was, grabbed the attention of the scientific world. The *Wall Street Journal* carried several stories, and the confirmation race was on. The story becomes rapidly dizzying. Georgia Tech chemists reported positive results for neutrons but quickly withdrew their claims when flaws in their detector were found. Groups at Texas A&M, Moscow, and Bulgaria reported positive results.

Several studies, at Yale, Caltech, and Utah, have since nailed the coffin lid shut on this affair (Gai et al. 1989). And there is a definitive book by Frank Close, *Too Hot to Handle*, reviewed by Terence Hines in the Winter 1992 SKEPTICAL INQUIRER, that serves as the obituary.

Well, not quite. John Wiley & Sons, an important scientific publisher, has seen fit to bring out the first of what will likely be many "resurrection" books: *Fire from Ice* by Eugene F. Mallove. This book comes on the heels of Close's book, to which it refers, and also follows a series of biting exposés of the whole affair in several journals, notably *Nature* and *Science*. It is useful as a catalog of the literature on the phenomenon, although it is incomplete in its listing of refutations. It contains a good guide to the names and dates for anyone wanting some reconstruction of the chronology of the whole controversy. It is, however, a work of neither science nor sociology. It belongs to the realm of spectacular wishful thinking.

Mallove retells the story that has been told many, many times. He spends much space in invective against Gary Taubs, a science writer who wrote a series of journalistic exposés on cold fusion at Texas A&M for *Science* during the early months of the affair.

Mallove's main point is that there

is a mound of literature—published, unpublished, presented at conferences, and residing in suppressed papers, that attest to the veracity of the original Pons and Fleischmann claims. He maintains that there is also a solid theoretical edifice that can be constructed to explain all of the observed phenomena.

Interest in hydrogen deposition in palladium dates back the mid-1960s, when its special permeability was first recognized. From time to time, work has focused on the ability of Pd membranes and rods to absorb large quantities of hydrogen. In fact, the idea that cold fusion might be possible in palladium goes back to the work of a Soviet group headed by B. V. Derjaguin, whose fame rests largely on his abortive work on polywater. The parallels between cold fusion and the polywater episode have been drawn innumerable times, even by Close and Mallove and by Rothman in the pages of *SI*, but this direct connection is almost a case of déjà vu (Cohen and Davies 1989). It has been said that the function of a scientific paper is to hide the process of discovery. This is especially true in these two affairs, and it is the point that links them. Short-term successes are not followed up with reports about long-term failures.

The thrust of the book appears to be the chapter titled "Whither Cold Fusion?" Here, Mallove compiles the statistics, conference reports, and anecdotes about detections. He lists a total of 92 groups from ten countries that have reported positive detections of some manifestation of cold fusion in Pons-Fleischmann style experiments by the end of 1990. He counts as a "group" any papers that differ in the first author. Actually, nearly one-fifth of all of his reports come from just four groups (two in India, one at Oak Ridge National Laboratory, and one at Case Western Reserve University). Only nineteen are from refereed journals; six are only newspaper accounts.

The subgroups are intriguing. There are 6 reports of neutrons plus heat, 34 of only heat, 56 of only neutrons, 5 of gamma-rays, and only 2 of gamma-rays and heat (but one of these is a newspaper account). In addition, 4 groups report detecting helium-3 (one reported finding helium-4) and 36 report detecting tritium. Only in reports of detection of nuclear daughter products is there any substantial overlap with any of the other phenomena connected with cold fusion. There is no indication of what the production rates are, how the detection was performed, or how the rates were calculated. There is no clear indication of whether the groups reporting only a limited aspect of cold fusion were not able to detect any of the others, or were uninterested in them. Groups are listed with incomplete bibliographic references, so it isn't possible to follow up this table with library searches.

Unreported are the truly immense number of failed experiments. Colleagues have told me of many places where cold-fusion experiments were begun for extended periods of time, none of which produced either positive results or publications. While it would be useful to counterbalance the table in Mallove's book (pp. 246-248) with a list of all the departments and labs worldwide that tried and failed to replicate the Utah experiments, it likely would have little effect on the final judgment of this author. For Mallove seems to believe that any positive result, no matter how incompletely characterized or poorly matching the original claims, is worthy of both report and inclusion with equal weight in the final tally of supporting evidence. In fact, he reports only

experiments in which positive results have been obtained.

Mallove also devotes considerable space to discussion of some of the theories proposed to explain the cold-fusion phenomena, although which one(s) is (are) being explained is never quite clear. He cites J. Schwinger, a theorist of supreme skill and insight in quantum field theory, and others as providing the body of work necessary to substantiate the claims made by the Utah group. Having read the published papers (Schwinger 1990), I can only conclude that they are good examples of what happens when partial information is used as the basis of theoretical work (see also Garwin 1989 and Leggett and Baym 1989 for discussion). Darwin observed in the *Origin of Species* that there is nothing as dangerous as a "wrong fact" and that one needs to fear such things far more than the more transient wrong theories. And even the choice of theories and theorists is enlarging with time (Suplee 1991).

Rather than dwell more on the details, let me add that this book should be read, and read carefully, by anyone interested in the cold-fusion affair. It is not an important book from the scientific point of view. But we have no similar record of the polywater episode to point to. It is not enough to have books that examine and debunk the extraordinary claims made by the many participants in this tragi-comedy. We need to hear their own voices, and these Mallove provides. If you want to see the other side of this issue, and to have a very clear look at the way that science can be distorted in its presentation, then Mallove's book is essential reading.

References

Cohen, J. S., and J. D. Davies. 1989. Is cold fusion hot? *Nature*, 342:487.

Gai, M., et al. 1989. Upper limits on neutron and gamma-ray emission from cold fusion. *Nature*, 340:29.

Garwin, R. 1989. Consensus on cold fusion still elusive. *Nature*, 338:616.

Leggett, A. J., and G. Baym. 1989. Can solid-state effects enhance the cold fusion rate? *Nature*, 340:45.

Schwinger, J. 1990. Nuclear energy in an atomic lattice. *Zeit. Phys.-D*, 15:221. (See also J. Schwinger, 1990, Cold fusion: A hypothesis, *Zeit. Naturforsch*, 45a:756.)

Suplee, C. 1991. Two new theories on cold fusion swiftly produce heat among scientists. *Washington Post*, April 26, p. A11.

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Belief and Practice of Ritual Magic

Persuasions of the Witch's Craft: Ritual Magic in Contemporary England. By T. M. Luhrmann. Harvard University Press, Cambridge, Mass., 1989. 382 pp. Cloth, $25.00. Paper, $12.95.

ROBERT E. McGRATH

Persuasions of the Witch's Craft is an ethnography of a subculture of contemporary England—magicians. Following the traditional anthropological method of participant observation, T. M. Luhrmann joined

several groups practicing "real" ritual magic in England in the 1980s. The observations collected over some 14 months led to a doctoral dissertation for the Department of Social Anthropology at the University of Cambridge, and to this book. The result is a thoughtful, questioning, skeptical, and unusually well-informed examination of one contemporary group of believers in the "irrational."

The magical beliefs in question are themselves difficult to rationally define. The groups studied can be characterized as following various flavors of "neopaganism" or "witchcraft." The common thread among the disparate individuals and groups is the actual practice and belief in ritual magic. For this reason, Luhrmann refers to them collectively as "magicians" (specifically *not* meaning "conjurers" like James Randi).

Luhrmann's main theme is "Why do people find magic persuasive?" (p. 8). He does not "believe" in magic and argues that most of the magicians studied did not "believe" in magic *at first*. But through time they became convinced of the effectiveness and validity of magic. This is all the more remarkable because:

> Magicians are ordinary, well-educated, usually middle-class people. They are not psychotically deluded, and they are not driven to practise by socioeconomic desperation. By some process, when they get involved with magic—whatever the reasons that sparked their interest—they learn to find it eminently sensible. (p. 7)

What are these ordinary folks doing, and how did they come to believe in magic?

Magicians practice a wide variety of rituals using an extremely eclectic set of ideas and symbols. However, all share the core concepts "that mind affects matter, and that in special circumstances, like ritual, the trained imagination can alter the physical world" (p. 7). Besides ritual, the magicians also share a core technology: meditation, training in visualization, and the development and skilled manipulation of complex symbol systems. Magicians also seem to share similar experiences with and feelings toward the practice of ritual magic.

One of Luhrmann's important findings is the actual effectiveness of magical technology. As part of the investigation, the author studied correspondence courses and participated in other forms of training commonly given to recruits for these groups. Luhrmann describes the exercises in meditation, guided visualization, "path working" (a structured exercise in visualization, often done in groups), and training in various occult symbologies as well as in how to "perceive" relations between symbols and between events and symbols.

Through the use of the magician's training practices the author not only learned a lot of jargon and theory but actually experienced some very real psychological effects. Luhrmann describes experiencing some rather unusual subjective states, including very real visual hallucinations. He also developed a facility for vivid, controlled visual imagery, for seeing "connections" between events, and for highly symbol-laden dreams. These experiences are widely reported and are often considered by the subject to be mystical or spiritual. Naturally, when these subjective experiences occur, magicians tend to take them as evidence of the "reality" and power of magic. It is interesting to read, though, of the deliberate use of these apparently effective techniques for increasing the frequency and intensity of such experiences.

A second key finding is that, for

these magicians, belief follows action rather than producing action. Magicians begin to study and participate in magic for many reasons, usually *not* because they believe it "works." As they become more involved, they begin to develop facility with the jargon and symbol sets, and the practice becomes important to them. Eventually, many become convinced that magic is "real" and "really works." Luhrmann calls this "interpretive drift" and relates it to the process by which a person becomes a specialist in a particular field:

> Modern magicians are interesting because they are a flamboyant example of a very common process: that when people get involved in an activity they develop ways of interpreting which make that activity meaningful even though it may seem foolish to the uninvolved. (p. 7)

It is, Luhrmann says, "what happens as an undergraduate turns into a lawyer" (p. 7).

The reasons for this shift to belief are not clear. The experience of one or more unusual, subjective, "mystical" events can be very convincing. The practice of ritual magic may also have some very real therapeutic or psychological value to some participants. And one should not forget the sheer fascination of manipulating complex symbol systems, and the feeling of control that this may give. That, after all, is one of the fun things about becoming a scientist! For whatever reasons, as the practice of ritual becomes important to the magician, the "belief" grows.

When questioned by a skeptical outsider, the convinced magician may deploy many arguments in defense of the belief. In the section entitled "Justifying to the Sceptics," Luhrmann describes these arguments:

> There seem to be four primary rationalizations of magical claims themselves, four different ways of intellectualizing the idea that rituals produce results. I call these approaches realist, two worlds, relativist, and metaphorical. The realist position says that the magician's claims are of the same status as those of "science"; the two worlds position says that they are true, but cannot be evaluated by rational means; the relativist position says that it is impossible even to ask questions about their "objective" status; and the metaphorical position asserts that the claims themselves are objectively false but valid as myth. (pp. 283-284)

These arguments are probably familiar to readers of the SKEPTICAL INQUIRER, but Luhrmann's careful dissection of them might be useful reading for other skeptics.

An important point to note, however, is that these arguments are more in the nature of *rationalizations* than real reasons for the activity. Luhrmann says that, although magicians practice magic for many and varied reasons, they *believe* in magic because they *practice* it. This idea is put in perspective in a scholarly discussion of the nature of belief, commitment, and irrationality. Some of the argument here is probably accessible only to a professional social theorist, which I am not.

Besides the admittedly academic content, this book contains a wealth of detail about contemporary magical practice in England. Among other information, Luhrmann gives the reader descriptions of rituals and their "meaning," a "Who's Who" of magicians in the London area, a description of some aspects of the social organization of magicians, and a bibliography of "what witches read." Most important, I think, this book provides a shining example of rational

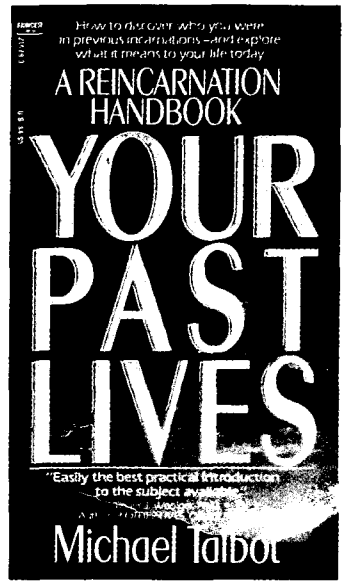
mation of various paranormal phenomena, Talbot claims that in his boyhood he was constantly plagued by attacks from a poltergeist. Strangely, there is no mention of a poltergeist in his new book.

Your Past Lives is a guide to discovering memories from one's previous incarnations. It starts with a survey of evidence for reincarnation, largely ignoring other explanations for the phenomena that he cites as evidence.

Talbot contends that we have all lived before many times, that we have memories of these existences in our subconscious, and that through the various techniques that he outlines, such as meditation and hypnosis, we can summon up these hidden memories. To do so is beneficial for at least two reasons, he claims. One is that traumatic memories from previous lives can interfere with the mental and emotional health of your present incarnation; the second is that it is possible to summon up abilities and aptitudes from previous incarnations that will help you in the current one. Skills like public speaking and horseback-riding can be learned more quickly if you were an expert in a previous existence, he claims.

What if these claims aren't true? Well, no problem. Talbot says if you use his techniques you will summon up images and stories that appear to be past existences. Okay. I can, if I'm so inclined, create life stories for many individuals in the past. I am after all a historian with a well-developed imagination. My contention remains though that there is no evidence offered that the images I create are anything more than just my imagination.

Well, states Talbot, never fear. Whether these are true memories of previous incarnations or not they are still powerful messages from my



subconscious mind, and I should treat them as such. They can teach me many things about myself and allow me to heal many of the psychic traumas that may plague me, enabling me to be a healthier, better human being more in touch with my true self. This interesting claim is backed up by no evidence whatsoever, except for the testimonials of people who have helped themselves through these methods.

I am sure that many people have made themselves feel better with these methods, but then again the same could be said of voodoo, witchcraft, and Ouija boards; and I confess that I have a cousin, a wonderful person, who finds her life more meaningful through an interest in astrology, and a sister-in-law who feels she has avoided great but unspecified calamity in her life by following the advice of a Chinese fortune-teller and never touching beef.

This does not mean that the claim

inquiry: a well-informed, skeptical, and yet gently sympathetic examination of a very human behavior. Despite the unrelenting critical evaluation, you will not find a harsh word about magicians anywhere in this book.

Skeptics might note the reality and power of the technology used by magicians. There appear to be real and powerful psychological forces at play that are little understood and little studied. If, as Luhrmann suggests, the frequency and intensity of these interesting (and compelling) subjective experiences can be increased by training, this claim deserves serious psychological investigation.

If Luhrmann is correct in the description of "interpretive drift," and that belief follows practice, then it is clear that rational argument is not likely to sway the believer in this type of irrationality. If the real rationale for magical practice is the practice itself, no amount of argument, no demolition of the rationalizations offered will change the practitioner's personal commitment to magic. This, perhaps, explains some of the frustration a skeptic may feel when attempting to debunk some kinds of deeply held, but not clearly justified beliefs.

If, indeed, belief follows practice, there is a lesson for teachers of scientific and critical thinking: get people to *do* it, and to *enjoy* doing it, and they will come to value and believe in it. Watching science on television or reading about it in a magazine will never persuade as well as actually doing science and having fun doing it. Critical thinking cannot be a spectator sport; everyone has to play it themselves. Make skepticism fun, and it will flourish.

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How to Explore Your Past Lives, or Pretend To

Your Past Lives, A Reincarnation Handbook. By Michael Talbot. Fawcett Crest, New York. 177 pp. Paper, $3.95.

PETER HUSTON

Michael Talbot believes in reincarnation. He knows that it is true. After all, when he was a small boy he had memories of a previous life as a Buddhist monk in Asia. These memories were so strong that he found himself making constant references to Buddhist teachings in the presence of his friends and relatives while in preschool and he refused to call his parents Mom and Dad until he was five years old, because he was fully aware of memories of other mothers and fathers and could not quite reconcile the existence of this mother and father with the memories of the previous ones.

I think it is worth pointing out that in one of his previous books, *Beyond the Quantum* (reviewed in *SI*, Winter 1987-88), in which he deals with the new physics and its supposed confir-

has any scientific validity, and the subconscious is most likely the single most controversial concept in the realm of modern-day psychology. Stating that you are receiving messages from your subconscious doesn't make your statement scientific, and this is where Talbot's book fails.

Now let me try to be more positive. Although the book fails as the scientific document that it portends to be, I confess that I enjoyed it. It was very interesting and a great deal of fun.

Talbot explains many methods of "summoning up past-life memories." All of them hinge on the premise that these memories are buried away in a barely accessible portion of the brain. Talbot claims that by using these methods he has summoned up memories of 20 previous lives. It's one of his stated qualifications for writing the book.

Some of these methods include meditation in various forms, dreaming (including lucid dreaming), self-hypnosis, and his own self-developed resonance method, which essentially consists of finding things like artifacts and photographs and maps of different places and times and seeing whether it "feels" as if you've lived there before. As for the last one, he states, keep at it and in time you'll learn if you've really lived there before or if you're just fooling yourself.

Talbot also covers past-life-exploration methods for couples and for people wanting "professional guidance and help in their past-life explorations."

The most peculiar thing about this book is the author's constant warning to beware of certain hazards, such as traumatic past-life memories, and not to confront them without the aid of a "certified and qualified past-life therapist." This sounds so much like the legitimate self-help and how-to books that clutter up my shelves that I couldn't help giggling whenever I stumbled across these warnings.

The book does contain the addresses of some peculiar-sounding organizations that can find you "certified psychics," "spirit channelers," or other such people who, Talbot says, can help you find past-life information. As a matter of fact, it seems that almost everything in the New Age arsenal, from crystals to pendulums, can be of help in finding your past lives.

This book is pseudoscientific gobbledygook of the worst sort, since it is based on an unproved premise. Nevertheless, it is well-written gobbledygook and provides an interesting insight into a cultural phenomenon. I enjoyed it. I'm sure that such information could do harm in the hands of the wrong people, but I have to give this book a peculiar and backhanded recommendation just because I found it so amusing. It does provide an interesting survey of what passes for "past-life exploration."

Either you believe in reincarnation or you don't, or like me you just sort of keep an open mind. For the scientifically inclined and critical thinkers, Talbot's book won't sway you one bit in any direction.

Peter Huston is a teacher of English as a second language and writer who currently lives in Taiwan. He has a degree in Asian studies and his interests include Asian history and religion, as well as science, paranormal claims, and much else.

Kitsch-Culture: A Look Inside the New Age

The New Believers. Video. Produced and directed by Tom Corboy, 1990. Monticello Productions, 1822 Easterly Terrace, Los Angeles, CA 90026.

JEFF WALKER

Director Tom Corboy's half-hour video "The New Believers" is a natural kitsch-culture sequel to his "Mondo Elvis." Corboy befriends four casualties/exploiters of future shock on the Whole Life Expo circuit, then gets them to talk about their troubled childhoods and how their New Age beliefs and special powers evolved.

One is Neville Rowe, a New Zealander who channels dolphins and does a dolphin impersonation that Rich Little might envy—onstage before a packed auditorium. His head tilts back into the howling wolf position, but it's a nasal honking that comes out, indicating either authentic dolphin channeling or a casual perusal of "Flipper" reruns. But did you ever hear Flipper announce: "We are dolphin form. You are human form. There is no difference between us; my friends, we are one in spirit"?

That's Neville's good side. His less appealing side emerges in a Karmic apologetic for Hitler and genocide. "It takes a great master to choose a life of such *seeming* negativity," he says of the former. Of the latter he observes, "Many who *chose to leave the earth plane* during the holocaust had been previously involved in genocide themselves. . . . Many had been Visigoths who swept down through Europe." Obviously the New Age has a hard time with monstrous evil, but merely makes it that much more likely to recur in refusing to recognize it. Let us though give Neville Rowe the last word here: "You cannot be a victim unless you so choose. . . . So what is wrong with incest? . . . Every act is growth."

Then there's "Master" Ho, whose name was a little more ho-hum prior to consulting the spirit-guide of his friend Dee-Dee. The guide, "Thomas," apparently insisted that Ho set up Hi-Dee-Ho Enterprises, purveyor of "metaphysical supplies." Later we see Ho reading some junky paperback on UFOs, then reinterpreting the ascension of Jesus for us: It is likely He was beamed up to the same spaceship (from another dimension) that had once been mistaken for a star over Bethlehem. Modestly, Ho admits to only one encounter with Christ, wordless but for the "Blessed art thou among many." He cryptically heaves Ho before vanishing. Sex therapy is Ho's specialty, and for a fee he'll wave a crystal around privates that need reanimating. Says the rotund, bearded Ho, "My reality is most other people's insanity." No doubt. At one point Ho hints at possible revelations about his own alien origins: "Thomas will on occasion pass through information. . . . I can't go any further with that; they won't let me. I'm sorry, I tried. . . . They cut me right off."

Britisher Margaret Rogers is an all-purpose healer/channeler. Shunned as an oddball in adolescence, she found comfort in direct communication with Jesus. She is apparently among the

very few channelers who can summon both the great grandpa of monotheism—Zoroaster—*and* the American Indian, Chief Red Cloud. We see a 1950s photo of an 11-year-old Rogers dressed up as a fairy queen. If she'd flitted through time to a booth at a 1991 psychics and seers fair, no one would have looked at her askance.

As for perky blonde, Shawn Shelton, suffice it to say that those crystals she sold you to dump in your bathtub owe some of their stress-reducing vibes to her invocation of "the light of the Christ within" during the packaging process. In fact, it's amazing how much New Age packaging involves repackaging age-old religion.

Director Corboy does a good job tying the New Age personalities of these four to early experience with rejection and with religion. I thought at first that the soundtrack of golden oldies such as "Dream," "I'm Always Chasing Rainbows," "Jesus Wash Away My Troubles," and "Pennies from Heaven" was anachronistic in this New Age context. But presumably Corboy was making a point with it: Styles of wishful thinking change, but the song remains the same.

"The New Believers" is certainly worth a viewing for those who have yet to O.D. on New Age eccentricity. My only real complaint is as a skeptic who's also a veggie (yes, there's one in *every* crowd). Why does the color photo on the video case have to highlight the two seconds of footage of a Whole Life Expo model wearing a giant tofu box? I plan to don an identical unit to the next CSICOP conference just to work off the stigma.

Jeff Walker is editor of the newsletter of the Ontario Skeptics.

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New Books

Age of Propaganda: The Everyday Use and Abuse of Persuasion. Anthony Pratkanis and Elliot Aronson. W. H. Freeman and Co., New York, 1992, 299 pp., $22.95, cloth. Significant new work by two distinguished psychologists on the social psychology of persuasion. The authors delve into the persuasion techniques used by political campaigners, salesmen, car dealers, advertisers, televangelists, and others. Offers practical insights into how to guard against the tactics and devices used (e.g., fear and guilt) without falling into abject cynicism. Provides readable analyses of patterns, motives, and effects of mass persuasion efforts.

Ambrose Bierce Is Missing and Other Historical Mysteries. Joe Nickell. University of Kentucky Press, Lexington, Ky., 1991, 180 pp., $22.00, cloth. Experienced investigator demonstrates the use of varied techniques in solving perplexing historical mysteries—ancient riddles, biographical enigmas, hidden identities, "fakelore," questioned artifacts, suspected documents, lost texts, obscured sources, and scientific challenges. Each is then illustrated by a complete case (e.g., the Nazca lines, the Shroud of Turin, Swift's lost silver mine, Lincoln's Bixby letter).

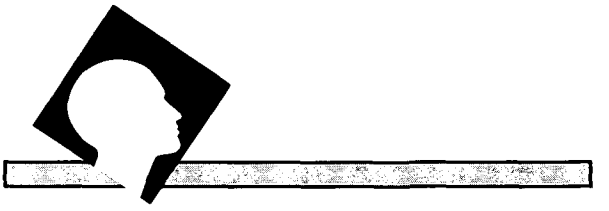
Psychology, 3rd ed. David G. Myers. Worth Publishers, New York, 1992, 636 pp. + glossary, references, indexes, $47.95, cloth. New edition of textbook that was favorably reviewed in our Spring 1991 issue. The author makes special efforts throughout to show science as a process of inquiry, to teach critical thinking, and to confront and provide skeptical examination of extraordinary claims, as well as to help students "feel a sense of wonder . . . and . . . convey the inquisitive, compassionate, and sometimes playful spirit in which psychology can be approached."

Wonder-Workers! How They Perform the Impossible. Joe Nickell. Prometheus Books, Buffalo, N.Y., 1991, 94 pp., $11.95, paper. For ages 9 to 14, provides brief biographies of ten famous "wonder-workers" (including Robert-Houdin, Houdini, Daniel Home, Joseph Dunninger, Edgar Cayce, and Peter Hurkos), analyzing and explaining the tricks and techniques they use "to make the impossible appear to be possible." With illustrations by the author, who is a former stage magician.

—*Kendrick Frazier*

An illustration from Joe Nickell's *Wonder-Workers*, showing Robert-Houdin performing "ethereal suspension."

Articles Of Note



Allen, Robin. "A New Age Dawns for Science." *New Scientist,* December 14, 1991, p. 52. A tongue-in-cheek proposal that scientists adopt dowsing, ley lines, astrologers, clairvoyants, biorhythms, and the like, to help with experiments in their labs.

Bartholomew, Robert E. "The Quest for Transcendence: An Ethnography of UFOs in America." *Anthropology of Consciousness* (American Anthropological Association), March-June 1991, pp. 1-12. Anthropological/ethnographic approach to UFO waves emphasizes the social construction of reality and the translation of unfamiliar symbol systems. Urges social scientists to study UFO waves as social phenomena of the Western world in the same way they chronicle "the marvelous diversity of human customs and realities" in other societies.

Bower, Bruce. "Contagious Thoughts." *Science News,* August 31, 1991, pp. 138-139. A look at "the magical law of contagion," a traditional belief noted in many cultures by anthropologists. It hinges on the conviction that all sorts of sources (friends, enemies, food, blood, hair) "contain some sort of contagious entity or 'essence' that transfers physical, psychological, or moral qualities to others."

Flynn, Mark. "Critical Comment on Hicks-Caskey and Potter, 'Effect of the Moon on a Sample of Developmentally Delayed, Institutionalized Women.' " *Perceptual and Motor Skills,* 73:963-967, 1991. Examines a 1991 report that found a "full moon effect" on women in a developmental center. Shows the findings are undermined by weekday, holiday, season, and expectancy effects.

Frymer, Murry. "Having Their Doubts: Scholarly Journal Provides a Home for Skeptics." *San Jose (Calif.) Mercury News,* November 24, 1991. Feature article about the SKEPTICAL INQUIRER, later published in at least eight other newspapers, including the *Chicago Tribune* and the *Miami Herald,* via Knight-Ridder service.

Garlaschelli, Luigi, Franco Ramaccini, and Sergio Della Sala. "Working Bloody Miracles." *Nature,* October 10, 1991, p. 507. See News and Comment, this issue.

Garwin, Richard L. "Fusion: The Evidence Reviewed." *Science,* November 29, 1991, pp. 1394-1395. Excellent critical examination by a noted physicist of the cold-fusion controversy in the form of an essay/review of Eugene Mallove's *Fire from Ice.* Concludes that cold fusion is more likely than not an example of what Irving Langmuir defined as "pathological science."

Grossman, Wendy. "Ask a Mars Question, Get a Mars Answer." *New Scientist,* October 19, 1991, pp. 53-54. Lively report on the 1991 EuroSkeptics conference in Amsterdam.

"Homeopaths' Cushion." *Nature,* October 10, 1991, p. 484. Editorial criticizing the situation in which the European Commission (the executive

arm of the European Communities) appeared to be caving in to pressure from the European Parliament to exempt homeopathic medicines from the strict rules applied to conventional medicines. "The danger is that under the policies of the EC, homeopathic medicines will spread throughout Europe and Britain to the detriment of an innocent public."

Humphrey, Nicholas, and Daniel C. Dennett. "Speaking for Ourselves: An Assessment of Multiple Personality Disorder." *Raritan, A Quarterly Review*, Summer 1989, pp. 68-98. A personal inquiry into, and assessment of, MPD by a psychologist and a philosopher. Their intent is to break down the polarities that make MPD seem fraudulent if you're a skeptic, or paranormal if you're a believer. Among their conclusions is that the possibility of developing multiple selves is inherent in all of us, but that the diagnosis of MPD has become, within certain elements of psychiatry, "a diagnostic fad" (200 cases reported by 1980; 4,000 now). "Although the existence of the clinical syndrome is now beyond dispute, there is as yet no certainty as to how much of the multiplicity currently being reported has existed prior to therapeutic intervention."

Kerr, Richard A. "The Lessons of Dr. Browning." *Science*, August 9, 1991, pp. 623-633. Good review of the case of Iben Browning's earthquake prediction concludes that bona fide earth scientists were too slow in countering the claim, leaving the field open to the public spectacle and pseudoscience that ensued. Also points out that the "same lessons about how pseudoscientific quake predictions, if left unchecked, can run wild" had been learned three times before (twice in 1975, once in 1981.) Quotes one researcher: "When are we going to institutionalize the lessons we've learned four times already?"

Koshland, Daniel E., Jr. "Credibility in Science and the Press." *Science*, November 1, 1991, p. 629. See Forum, this issue.

Krech, Shepard, III. "Extraordinary Archaeology" *Nature*, August 1, 1991, pp. 389-390. Review of Marshall McKusick's *The Davenport Conspiracy Revisited.*

Maldonado, George. "Variation in Suicide Occurrence by Time of Day, Day of the Week, Month, and Lunar Phase." *Suicide and Life-Threatening Behavior*, Summer 1991, pp. 174-185. Examination of suicide data among residents of Sacramento County, California, from 1925 to 1983 (4,190 cases). The finding of relevance here: Contrary to popular belief, suicide occurrences did not vary by lunar phase.

Marshall, Eliot. "A Is for Apple, Alar, and . . . Alarmist?" *Science*, October 4, 1991, pp. 20-22. Excellent examination of the Alar controversy, in which the National Resources Defense Council and CBS's "60 Minutes" almost did in the apple market over claims about a toxic chemical that is now considered to be far less risky than had been thought.

"A Question of Mind Over Matter." *Physics Today*, October 1991, pp. 13-15, 146. Interesting exchange between Robert G. Jahn and Nobel laureate Philip W. Anderson, both of Princeton University, over Anderson's earlier column (*Physics Today*, December 1990; see *SI*, Summer 1991, p. 385) criticizing such claims as those presented from Jahn's laboratory. Jahn maintains his results indicating evi-

dence of micropsychokinesis are credible; Anderson disagrees. "Measurements such as Jahn does must be tested with more rigor and more suspicion. . . ." Anderson also says Bayesian estimation is the more appropriate statistical method for judging such experiments.

Sandbek, Terence J. "Hungry People Who Buy Imaginary Food with Real Money: Psychology, Mysticism, Superstition and the Paranormal." Paper presented at 99th Annual Convention of the American Psychological Association, San Francisco, August 17, 1991. Calls for psychologists to help the public find the *real* nourishment: psychology instead of parapsychology, astronomy instead of astrology, biology instead of biorhythms, physics rather than psychics, etc.

Sands, Joanne M., and Lynn E. Miller. "Effects of Moon Phase and Other Temporal Variables on Absenteeism." *Psychological Reports*, 69:959-962, 1991. Study examined correlation between full moon and daily absenteeism rates in a large organization while correcting for autocorrelation and controlling for the effects of the day of the week, month, and proximity to a holiday. Contrary to expectations, the full moon was associated with a significant (but very slight) *decrease* in absenteeism. The authors discuss reasons for persistent beliefs in the effects of the full moon.

Small, Gary W., M.D., Michael W. Propper, M.D., Eugenia T. Randolph, M.D., and Spencer Eth, M.D. "Mass Hysteria Among Student Performers: Social Relationship as a Symptom Predictor." *American Journal of Psychiatry*, 148(9): 1200-1205. Case study of an outbreak of illness suddenly afflicting student performers in Santa Monica, California, Civic Auditorium on April 13, 1989. Two hundred forty-seven students became ill (dizziness, weakness, nausea, fainting), resulting in one of the largest emergency evacuations in Santa Monica history. Characteristic features of mass hysteria described in similar epidemics were identified. The results confirm that multiple psychological and physical factors contribute to such outbreaks, particularly social transmission. The best predictor of the development of symptoms was observing a friend with symptoms.

—*Kendrick Frazier*

Forum

Credibility in Science and the Press

DANIEL E. KOSHLAND, JR.

A recent lead story in *Time* entitled "Crisis in the Labs" characterizes the American researcher as under siege because of recent cases of fraud, misconduct, and error by scientists. While accepting responsibility for such aberrations, the scientific community has a right to ask whether recent examples of plagiarism, fabrication, and unethical conduct in the press demand an analogous article entitled "Crisis in Journalism." The parallelism between the problems and responsibilities of each community suggests that a set of procedures in both science and journalism could benefit the credibility and accountability of both professions.

A community that depends for its success on the responsibility of many individuals has difficulty in being collectively accountable for the misdeeds of some of its members. No one suggests that *Time* or the *New York Times* should be ashamed of themselves because of stories published in the *National Enquirer* or because pornographic magazines are available in every hamlet in America. Individuals and institutions are made accountable in journalism and in science by taking seriously those who are consistently accurate and reliable and ignoring or decrying those who are consistently sensationalized and inaccurate. Pressure is increasing to create an overarching authority in science that could prevent the occasional mountebank or misguided institution from having a brief moment of notoriety. Freedom of the press and freedom of scientific inquiry are similar in the sense that an overarching directorate would kill the enterprise, but each profession is accountable in the establishment of procedures that responsible journalists and responsible scientists are expected to maintain.

Once the similarity of accountability in the two professions is recognized, they can help each other to be of greater service to society. There are many examples these days of improper conduct, of which the recent coverage of the chemical Alar, used to slow the ripening of apples, is a dramatic example. In that case, a clearly dubious report about possible carcinogenicity by a special-interest group was hyped by a news organization without the most simple checks on its reliability or documentation. This caused panic among consumers and losses of millions of dollars by apple growers. Confronted with the inadequacy of the data, a spokesman for the public-interest group recently suggested that it was excusable because people are eating more apples than ever before. That is like an embezzler justifying embezzlement by saying the banking industry continues to survive. Worse, the public's disdain for repeated scares indicates that an individual publication's (or broadcast group's) willingness to cry "wolf" uncritically may be

destroying the press's own credibility and its ability to provide legitimacy to responsible environmentalists. The *Time* article acknowledges this by pointing out that the press has been too willing to publicize Jeremy Rifkin's cries of alarm, which so far have been consistently wrong.

The press cannot be expected to have in-house scientists for every occasion, but can be expected to establish procedures to improve its own credibility. "Scientific" reports vary from articles in refereed journals to statements released at dataless press conferences. The credibility of scientists varies from those with records of objectivity to others who only travel from press conference to press conference and law court to law court saying what their clients want to hear. The ultimate decider in all controversial matters must be the data in a well-run experiment, but the press and science can catalyze a mutual accountability if the press would routinely reveal the journal in which the information is to be or was published and disclose the track record of the scientists or the groups of scientists (for example, the National Academy of Sciences, Exxon, or the Natural Resources Defense Council) that are quoted. In a democracy the right of an industry to state that its compound is safe and the right of a public-interest group to cry out with alarm cannot and should not be suppressed, but a press that equates a peer-reviewed experiment with a public-relations document should expect the public to equate *Time* with the *National Enquirer*. So a policy of routinely revealing sources and records would improve the credibility of the press and expose those scientists who fail to maintain standards of objectivity.

The scientific community, like the press, must be willing to develop rules and procedures to maximize accountability, an example of which would be a mutual agreement that press conferences without peer-reviewed data should be greeted with heavy skepticism. In that way both the press and science can be credible without stifling either the freedom of the press or the freedom of scientific inquiry.

Daniel Koshland, Jr., is the editor of Science. *This editorial is reprinted from* Science *(254:629, Nov. 1, 1991) by permission. ©American Association for the Advancement of Science.*

Our Spooky Presidential Coincidences Contest

JOHN LEAVY

This offering is an idea that springs from a bull session among us computer programmers at the University of Texas Data Processing Department. Ann Landers had just reprinted, for the zillionth time, a list of chilling parallels between the assassinations of Abraham Lincoln and John F. Kennedy. In the same spirit of skepticism that led Crash Davis, in the film *Bull Durham*, to wonder why every believer in reincarnation was always someone famous in a past life, we wondered aloud why no one ever talks about the chilling similarities between William McKinley and James Garfield. Sure enough, those of us who know American history were able to find a dozen

similarities between McKinley and Garfield.

Well, the joke took on a life of its own. Before long, we thought of common themes in the lives of Zachary Taylor and William Henry Harrison. In fact, Thomas Jefferson and Richard Nixon seemed to have as much in common as Lincoln had with Kennedy. This proved to be so easy and so much fun that I decided to write down all the spooky coincidences we've come up with and present them to the SKEPTICAL INQUIRER. I propose that the SKEPTICAL INQUIRER hold a Spooky Presidential Coincidences contest, with a nominal prize (see below).

Everybody has heard about the supposedly eerie similarities between the lives and deaths of Abraham Lincoln and John F. Kennedy.

1. Lincoln was elected president in 1860; Kennedy was elected in 1960.
2. Lincoln and Kennedy were both concerned with civil rights.
3. "Lincoln" and "Kennedy" have seven letters each.
4. Lincoln had a secretary named Kennedy, and Kennedy had a secretary named Lincoln.
5. Both were succeeded by Southerners named Johnson.
6. Both were assassinated by men with three names (John Wilkes Booth and Lee Harvey Oswald.
7. Booth and Oswald both espoused unpopular political ideas.
8. Booth shot Lincoln in a theater and hid in a warehouse; Oswald shot Kennedy from a warehouse and hid in a theater.

Oh sure, a spoilsport could point out that Spooky Coincidence no. 2 is ridiculously vague. Or that Johnson is the second most common last name in America. Or that John Wilkes Booth's ideas (support for slavery and the Confederacy) were far from unpopular in 1865. Or even that Lincoln was shot in a playhouse, while

President Carter-Nixon

Oswald was hiding in a movie theater. But I suggest that the spoilsport hold his tongue; the eerie parallels between Lincoln and Kennedy may well be part of a much larger and more chilling pattern.

Coincidence? You Decide . . .

1. William McKinley and James Garfield were both Republicans.
2. McKinley and Garfield were both born and raised in Ohio.
3. McKinley and Garfield were both Civil War veterans.

President Bush-Lincoln

4. McKinley and Garfield both served in the House of Representatives.

5. McKinley and Garfield both supported the gold standard and tariffs for protection of American industry.

6. "McKinley" and "Garfield" both have eight letters.

7. McKinley and Garfield were both replaced by vice-presidents from New York City (Theodore Roosevelt and Chester Alan Arthur).

8. Both of their vice-presidents wore mustaches.

9. McKinley and Garfield were both shot in September, in the first year of their current terms.

10. "Chester Alan Arthur" and "Theodore Roosevelt" have seventeen letters each.

11. Both of their assassins, Charles Guiteau and Leon Czolgosz, had foreign-sounding names.

12. Garfield had a cat named McKinley; McKinley had a cat named Garfield. (Okay, okay, so I made this one up.)

* * *

1. William Henry Harrison and Zachary Taylor were both Whigs.

2. Both were born and raised in Virginia.

3. Both came to prominence as victorious generals in the U.S. Army.

4. Both died in their first terms, shortly after taking office.

5. Both had nicknames that began with the word "Old" ("Old Tippecanoe," and "Old Rough and Ready").

6. Both were replaced by their vice-presidents, each of whom was nicknamed "His Accidency." (John Tyler and Millard Fillmore).

* * *

1. Polk and Carter were both named James.

2. Polk and Carter were both Democrats.

3. Polk and Carter were both dark horse candidates for the presidency.

4. Polk and Carter both served only one term as president.

5. Polk and Carter each had a middle name with only four letters (Knox and Earl, respectively).

6. Polk and Carter both defeated men named Henry en route to the White House (Polk defeated Henry Clay, Carter defeated Henry Jackson).

* * *

1. Abraham Lincoln and Andrew Jackson were both lawyers.

2. Lincoln and Jackson both have state capitals named after them.

3. Both had first names that began with "A," and last names with seven letters.

4. Both were rugged frontiersmen.

5. Both supported a strong federal government, against advocates of "states' rights."

6. Each had a falling out with his original vice-presidents and subsequently replaced him.

7. Both were succeeded by their second vice-presidents, each of whom was a highly unpopular president.

* * *

1. Richard Nixon and Thomas Jefferson both had vice-presidents who left office under a cloud of scandal (Aaron Burr and Spiro Agnew).

2. Both had served as vice-president before becoming president.

3. Both had lost a presidential election to a Harvard graduate named John from a wealthy, prominent Massachusetts family, before finally winning the presidency.

4. Both were elected to their first terms by narrow margins, and to their second terms by wide margins.

5. The next president elected after each was a Southerner named James.

6. "Nixon and "Jefferson" both

ended with "on."

* * *

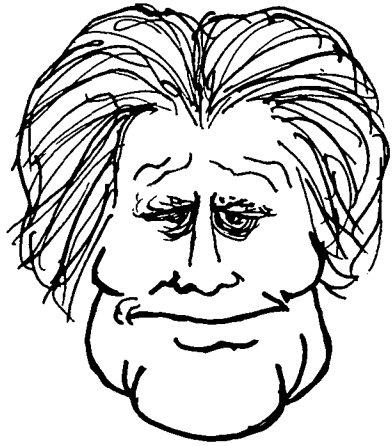
1. George Washington and Dwight Eisenhower both came to prominence as victorious generals.
2. Both served two full terms as president.
3. Both gave famous farewell speeches warning the United States against foolish military policies.
4. Both were replaced as president by Harvard graduates named John, from wealthy, prominent Massachusetts families.
5. "Eisenhower" and "Washington" have ten letters each.
6. "Dwight" and "George" have six letters each.
7. Neither belonged to a political party before seeking the presidency.

* * *

1. Ulysses S. Grant was elected in 1868, and re-elected in 1872; Richard Nixon was elected in 1968, and re-elected in 1972.
2. Nixon and Grant both succeeded unpopular Southern Democrats named Johnson.
3. Nixon and Grant were both Republicans.
4. Both their administrations were infamous for corruption.
5. Both Nixon and Grant wrote best-selling memoirs after leaving office.
6. Both were succeeded by Republicans from the Midwest.

* * *

1. James Madison was elected president in 1812; Woodrow Wilson was elected in 1912. (Yeah, I know, Madison was actually elected in 1808 and *re*-elected in 1812, but don't be picky!)
2. Madison and Wilson were both born in Virginia.
3. Madison and Wilson both attended Princeton University.
4. Both were highly regarded as intellectuals.
5. Both were strongly influenced by their wives.
6. Both led the United States into war with the most powerful nation in Europe, after years of struggling to maintain neutrality, because of attacks on American ships in the Atlantic.
7. "Madison" and "Wilson" both end with "son."



President Jackson-Ford

President Kennedy-Johnson

* * *

1. Woodrow Wilson and Dwight Eisenhower were both leaders of American war efforts against Germany.

2. Both had been presidents of Ivy League universities before seeking the presidency of the United States.

3. Both were incapacitated by illness during large parts of their terms in office.

4. Both were born in the South, but neither was perceived as a Southerner.

5. Both served two full terms as president.

6. Both were replaced by men who died in their first terms.

* * *

1. Martin Van Buren was president from 1837-1841. Franklin Roosevelt was president from 1937-1941.

2. Van Buren and Roosevelt were both of Dutch ancestry.

3. Van Buren and Roosevelt were both born and raised in New York.

4. Both served as governor of New York before becoming president.

5. Both served as president during a time of economic crisis, and widespread panic in the banking industry.

6. Both were replaced by men with the letters "HARR" in their names (William Henry HARRison and HARRy Truman).

* * *

You get the idea. Finding Spooky Parallels is easy. So why should I have all the fun? I figure that with minimal effort, anyone should be able to think of five or six eerie similarities between any two presidents. So pick any two presidents, and let your imagination run wild. Harry Truman and John Quincy Adams! Millard Fillmore and Calvin Coolidge! Warren Harding and Franklin Pierce! Ronald Reagan and Rutherford B. Hayes! George Washington and Grover Cleveland! George Bush and William Howard Taft! Find as many coincidences as you can: if possible, accentuate the yin and yang aspects of their lives (President A had a son named Irving, President B had a father named Irving; President A was born in Dubuque and died in Peoria, President B was born in Peoria and died in Dubuque).

The eeriest parallels will be printed in a future issue of the SKEPTICAL INQUIRER. The reader who submits the most inspired list of eerie presidential parallels will receive his choice of: (*a*) a brand new copper Abraham Lincoln medallion, (*b*) a portable, shiny, bas relief depiction of Thomas Jefferson, (*c*) a silver-plated engraving of Franklin Roosevelt, (*d*) a copy of the just-published new collection of SKEPTICAL INQUIRER articles, *The Hundredth Monkey and Other Paradigms of the Paranormal.*

(*Editor's Note:* This sounds like fun and we'll offer a copy of *The Hundredth Monkey* as a prize. Send your entries to us at Editor, The Skeptical Inquirer, 3025 Palo Alto Dr. NE, Albuquerque, NM 87111, but we're going to ask John Leavy and his colleagues to do the judging. They started this!—*K.F.*)

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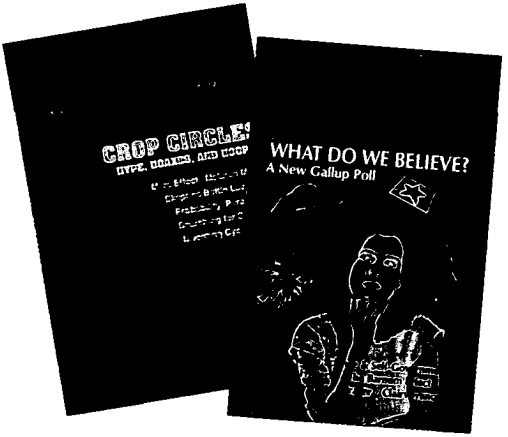

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SUMMER 1989 (vol. 13, no. 4): The New Age—An Examination: The New Age in perspective, *Kurtz.* A New Age reflection in the magic mirror of science, *O'Hara.* The New Age: The need for myth in an age of science, *Schultz.* Channeling, *Alcock.* The psychology of channeling, *Reed,* 'Entities' in the linguistic minefield, *Thomason.* Crystals, *Lawrence.* Consumer culture and the New Age, *Rosen.* The Shirley MacLaine phenomenon, *Gordon.* Special report: California court jails psychic surgeon, *Brenneman.*

SPRING 1989 (vol. 13, no. 3): High school biology teachers and pseudoscientific belief, *Eve and Dunn.* Evidence for Bigfoot? *Dennett.* Alleged pore structure in Sasquatch footprints, *Freeland and Rowe.* The lore of levitation, *Stein.* Levitation 'miracles' in India, *Premanand.* Science, pseudoscience, and the cloth of Turin, *Nickell.* Rather than just debunking, encourage people to think, *Seckel.* MJ-12 papers 'authenticated'? *Klass.* A patently false patent myth, *Sass.*

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FALL 1988 (vol. 13, no. 1): Special report: Astrology and the presidency, *Kurtz* and *Bob.* Improving Human Performance: What about parapsychology? *Frazier.* The China syndrome: Further reflections on the paranormal in China, *Kurtz.* Backward masking, *McIver.* The validity of graphological analysis, *Furnham.* The intellectual revolt against science, *Grove.* Reich the rainmaker, *Gardner.*

SUMMER 1988 (vol. 12, no. 4): Testing psi claims in China, *Kurtz, Alcock, Frazier, Karr, Klass, and Randi.* The appeal of the occult: Some thoughts on history, religion, and science, *Stevens.* Hypnosis and reincarnation, *Venn.* Pitfalls of perception, *Wheeler.* Wegener and pseudoscience: Some misconceptions, *Edelman.* An investigation of psychic crime-busting, *Emery.* High-flying health quackery, *Hines.* The bar-code beast, *Keith.* Occam's Razor and the nutshell earth, *Gardner.*

SPRING 1988 (vol. 12, no. 3): Neuropathology and the legacy of spiritual possession, *Beyerstein.* Varieties of alien experience, *Ellis.* Alien-abduction claims and standards of inquiry (excerpts from Milton Rosenberg's radio talk-show with guests Charles Gruder, Martin Orne, and Budd Hopkins). The MJ-12 Papers: Part 2, *Klass.* Doomsday: The May 2000 prediction, *Meeus.* My visit to the Nevada Clinic, *Barrett.* Morphic resonance in silicon chips, *Varela and Letelier.* Abigail's anomalous apparition, *Durm.* The riddle of the Colorado ghost lights, *Bunch and White.* The obligation to disclose fraud, *Gardner.*

WINTER 1987-88 (vol. 12, no. 2): The MJ-12 papers: Part I, *Philip J. Klass.* The aliens among us: Hypnotic regression revisited, *Baker.* The brain and consciousness: Implications for psi, *Beyerstein.* Past-life hypnotic regression, *Spanos.* Fantasizing under hypnosis, *Reveen.* The verdict on creationism, *Gould.* Irving Kristol and the facts of life, *Gardner.*

FALL 1987 (vol. 12, no. 1): The burden of skepticism, *Sagan.* Is there intelligent life on Earth? *Kurtz.* Medical Controversies: Chiropractic, *Jarvis;* Homeopathy, *Barrett, M.D.;* Alternative therapies, *Jones;* Quackery, *Pepper.* Catching Geller in the act, *Emery.* The third eye, *Gardner.* Special Report: CSICOP's 1987 conference.

SUMMER 1987 (vol. 11, no. 4): Incredible cremations: Investigating combustion deaths, *Nickell and Fischer.* Subliminal deception, *Creed.* Past tongues remembered? *Thomason.* Is the universe improbable? *Shotwell.* Psychics, computers, and psychic computers, *Easton.* Pseudoscience and children's fantasies, *Evans.* Thoughts on science and superstrings, *Gardner.* Special Reports: JAL pilot's UFO report, *Klass;* Unmasking psychic Jason Michaels, *Busch.*

SPRING 1987 (vol. 11, no. 3): The elusive open mind: Ten years of negative research in parapsychology, *Blackmore.* Does astrology need to be true? Part 2: The answer is no, *Dean.* Magic, science, and metascience: Some notes on perception, *D. Sagan.* Velikovsky's interpretation of the evidence offered by China, *Lo.* Anomalies of Chip Arp, *Gardner.*

WINTER 1986-87 (vol. 11, no. 2): Case study of West Pittston 'haunted' house, *Kurtz.* Science, creationism and the Supreme Court, *Seckel,* with statements by *Ayala, Gould,* and *Gell-Mann.* The great East Coast UFO of August 1986, *Oberg.* Does astrology need to be true? Part 1, *Dean.* Homing abilities of bees, cats, and people, *Randi.* The EPR paradox and Rupert Sheldrake, *Gardner.* Followups: On fringe literature, *Bauer;* on Martin Gardner and Daniel Home, *Beloff.*

FALL 1986 (vol. 11, no. 1): The path ahead: Opportunities, challenges, and an expanded view, *Frazier.* Exposing the faith-healers, *Steiner.* Was Antarctica mapped by the ancients? *Jolly.* Folk remedies and human belief-systems, *Reuter.* Dentistry and pseudoscience, *Dodes.* Atmospheric electricity, ions, and pseudoscience, *Dolezalek.* Noah's ark and ancient astronauts, *Harrold and Eve.* The Woodbridge UFO incident, *Ridpath.* How to bust a ghost, *Baker.* The unorthodox conjectures of Tommy Gold, *Gardner.*

SUMMER 1986 (vol. 10, no. 4): Occam's razor, *Shneour.* Clever Hans redivivus, *Sebeok.* Parapsychology miracles, and repeatability, *Flew.* The Condon UFO study, *Klass.* Four decades of fringe literature, *Dutch.* Some remote-viewing recollections, *Weinberg.* Science, mysteries, and the quest for evidence, *Gardner.*

SPRING 1986 (vol. 10, no. 3): The perennial fringe, *Asimov.* The uses of credulity, *de Camp.* Night walkers and mystery mongers, *Sagan.* CSICOP after ten years, *Kurtz.* Crash of the crashed-saucers claim, *Klass.* A study of the Kirlian effect, *Watkins and Bickel.* Ancient tales and space-age myths of creationist evangelism, *McIver.* Creationism's debt to George McCready Price, *Gardner.*

WINTER 1985-86 (vol. 10, no. 2): The moon was full and nothing happened, *Kelly, Rotton, and Culver.* Psychic studies: The Soviet dilemma, *Ebon.* The psychopathology of fringe medicine, *Sabbagh.* Computers and rational thought, *Spangenburg and Moser.* Psi researchers' inattention to conjuring, *Gardner.*

FALL 1985 (vol. 10, no. 1): Investigations of firewalking, *Leikind and McCarthy.* Firewalking: reality or illusion, *Dennett.* Myth of alpha consciousness, *Beyerstein.* Spirit-rapping unmasked, *V. Bullough.* The Saguaro incident, *Taylor and Dennett.* The great stone face, *Gardner.*

SUMMER 1985 (vol. 9, no. 4): Guardian astrology study, *Dean, Kelly, Rotton, and Saklofske.* Astrology and the commodity market, *Rotton.* The hundredth monkey phenomenon, *Amundson.* Responsibilities of the media, *Kurtz.* 'Lucy' out of context, *Albert.* The debunking club, *Gardner.*

SPRING 1985 (vol. 9, no. 3): Columbus poltergeist: I, *Randi.* Moon and murder in Cleveland, *Sanduleak.* Image of Guadalupe, *Nickell and Fischer.* Radar UFOs, *Klass.* Phrenology, *McCoy.* Deception by patients, *Pankratz.* Communication in nature, *Orstan.* Relevance of belief systems, *Gardner.*

WINTER 1984-85 (vol. 9, no. 2): The muddled 'Mind Race,' *Hyman.* Searches for the Loch Ness monster, *Razdan and Kielar.* Final interview with Milbourne Christopher, *Dennett.* Retest of astrologer John McCall, *Ianna and Tolbert.* 'Mind Race,' *Gardner.*

FALL 1984 (vol. 9, no. 1): Quantum theory and the paranormal, *Shore.* What is pseudoscience? *Bunge.* The new philosophy of science and the 'paranormal,' *Toulmin.* An eye-opening double encounter, *Martin.* Similarities between identical twins and between unrelated people, *Wyatt et al.* Effectiveness of a reading program on paranormal belief, *Woods,* Pseudoscientific beliefs of 6th-graders, *A. S. and S. J. Adelman.* Koestler money down the psi-drain, *Gardner.*

SUMMER 1984 (vol. 8, no. 4): Parapsychology's past eight years, *Alcock.* The evidence for ESP, *C. E. M. Hansel.* $110,000 dowsing challenge, *Randi.* Sir Oliver Lodge and the spiritualists, *Hoffmaster.* Misperception, folk belief, and the occult, *Connor.* Psychology and UFOs, *Simón.* Freud and Fliess, *Gardner.*

SPRING 1984 (vol. 8, no. 3): Belief in the paranormal worldwide: Mexico, *Mendez-Acosta;* Netherlands, *Hoebens;* U.K., *Hutchinson;* Australia, *Smith;* Canada, *Gordon;* France, *Rouzé.* Debunking, neutrality, and skepticism in science, *Kurtz.* University course reduces paranormal belief, *Gray.* The Gribbin effect, *Roder.* Proving negatives, *Pasquarello.*

acLaine, McTaggart, and McPherson, *Gardner.*

INTER 1983-84 (vol. 8, no. 2): Sense and nonsense parapsychology, *Hoebens.* Magicians, scientists, and psyics, *Ganoe and Kirwan.* New dowsing experiment, *Martin.* he effect of TM on weather, *Trumpy.* The haunting of e Ivan Vassilli, *Sheaffer.* Venus and Velikovsky, *Forrest.* agicians in the psi lab, *Gardner.*

ALL 1983 (vol. 8, no. 1): Creationist pseudoscience, *hadewald.* Project Alpha: Part 2, *Randi.* Forecasting radio iality by the planets, *Dean.* Reduction in paranormal lief in college course, *Tobacyk.* Humanistic astrology, *lly and Krutzen.*

JMMER 1983 (vol. 7, no. 4): Project Alpha: Part 1, *Randi.* oodman's 'American Genesis,' *Feder.* Battling on the airaves, *Slavsky.* Rhode Island UFO film, *Emery.* Landmark < hoax, *Gardner.*

PRING 1983 (vol. 7, no. 3): Iridology, *Worrall.* The Nazca awings revisited, *Nickell. People's Almanac* predictions, *nnelly.* Test of numerology, *Dlhopolsky.* Pseudoscience the name of the university, *Lederer and Singer.*

INTER 1982-83 (vol. 7, no. 2): Palmistry, *Park.* The eat SRI die mystery, *Gardner.* The 'monster' tree-trunk Loch Ness, *Campbell.* UFOs and the not-so-friendly ies, *Klass.* In defense of skepticism, *Reber.*

ALL 1982 (vol. 7, no. 1): The prophecies of Nostradamus, *zeau.* Prophet of all seasons, *James Randi.* Revival of ostradamitis, *Hoebens.* Unsolved mysteries and extradinary phenomena, *Gill.* Clearing the air about psi, *ndi.* A skotography scam, *Randi.*

JMMER 1982 (vol. 6, no. 4): Remote-viewing, *Marks.* adio disturbances and planetary positions, *Meeus.* Divin- g in Australia, *Smith.* "Great Lakes Triangle," *Cena.* epticism, closed-mindedness, and science fiction, *Beyer- in.* Followup on ESP logic, *Hardin and Morris* and *Gendin.*

PRING 1982 (vol. 6, no. 3): The Shroud of Turin, *Mueller.* hroud image, *McCrone.* Science, the public, and the hroud, *Schafersman.* Zodiac and personality, *Gauquelin.* llowup on quantum PK, *Hansel.*

INTER 1981-82 (vol. 6, no. 2): On coincidences, *Ruma lk.* Croiset: Part 2, *Hoebens.* Scientific creationism, *Schadeld.* Follow-up on 'Mars effect,' *Rawlins,* responses by *SICOP Council* and *Abell and Kurtz.*

ALL 1981 (vol. 6, no. 1): Gerard Croiset: Part 1, *Hoebens.* est of perceived horoscope accuracy, *Lackey.* Planetary sitions and radio propagation, *Ianna and Margolin.* ermuda Triangle, 1981, *Dennett.* Observation of a psychic, *clntyre.*

JMMER 1981 (vol. 5, no. 4): Investigation of 'psychics,' *ndi.* ESP: A conceptual analysis, *Gendin.* The extrover- on-introversion astrological effect, *Kelly and Saklofske.* Art, ence, and paranormalism, *Habercom.* Profitable nightare, *Wells.* A Maltese cross in the Aegean? *Loftin.*

PRING 1981 (vol. 5, no. 3): Hypnosis and UFO eductions, *Klass.* Hypnosis not a truth serum, *Hilgard.* Schmidt's PK experiments, *Hansel.* Further comments Schmidt's experiments, *Hyman.* Atlantean road, *Randi.* eciphering ancient America, *McKusick.* A sense of the diculous, *Lord.*

INTER 1980-81 (vol. 5, no. 2): Fooling some people the time, *Singer and Benassi.* Recent perpetual motion velopments, *Schadewald.* National Enquirer astrology udy, *Mechler, McDaniel, and Mulloy.* Science and the ountain peak, *Asimov.*

ALL 1980 (vol. 5, no. 1): The Velikovsky affair — articles *Oberg, Bauer, Frazier.* Academia and the occult, *Greenll.* Belief in ESP among psychologists, *Padgett, Benassi, d Singer.* Bigfoot on the loose, *Kurtz.* Parental expectations of miracles, *Steiner.* Downfall of a would-be psychic, *cBurney and Greenberg.* Parapsychology research, *Mishlove.*

SUMMER 1980 (vol. 4, no. 4): Superstitions, *Bainbridge and Stark.* Psychic archaeology, *Feder.* Voice stress analysis, *Klass.* Follow-up on the 'Mars effect,' Evolution vs. creationism, and the Cottrell tests.

SPRING 1980 (vol. 4, no. 3): Belief in ESP, *Morris.* UFO hoax, *Simpson.* Don Juan vs. Piltdown man, *de Mille.* Tiptoeing beyond Darwin, *Greenwell.* Conjurors and the psi scene, *Randi.* Follow-up on the Cottrell tests.

WINTER 1979-80 (vol. 4, no. 2): The 'Mars effect' — articles *by Kurtz, Zelen, and Abell; Rawlins; Michel and Françoise Gauquelin.* How I was debunked, *Hoebens.* The metal bending of Professor Taylor, *Gardner.* Science, intuition, and ESP, *Bauslaugh.*

FALL 1979 (vol. 4, no. 1): A test of dowsing, *Randi.* Science and evolution, *Godfrey.* Television pseudodocumentaries, *Bainbridge.* New disciples of the paranormal, *Kurtz.* UFO or UAA, *Standen.* The lost panda, *van Kampen.* Edgar Cayce, *Randi.*

SUMMER 1979 (vol. 3, no. 4): The moon and the birthrate, *Abell and Greenspan.* Biorhythms, *Hines.* 'Cold reading,' *Randi.* Teacher, student, and the paranormal, *Kral.* Encounter with a sorcerer, *Sack.*

SPRING 1979 (vol. 3, no. 3): Near-death experiences, *Alcock.* Television tests of Musuaki Kiyota, *Scott and Hutchinson.* The conversion of J. Allen Hynek, *Klass.* Asimov's corollary, *Asimov.*

WINTER 1978-79 (vol. 3, no. 2): Is parapsychology a science? *Kurtz.* Chariots of the gullible, *Bainbridge.* The Tunguska event, *Oberg.* Space travel in Bronze Age China, *Keightley.*

FALL 1978 (vol. 3, no. 1): An empirical test of astrology, *Bastedo.* Astronauts and UFOs, *Oberg.* Sleight of tongue, *Schwartz.* The Sirius "mystery," *Ridpath.*

SPRING/SUMMER 1978 (vol. 2, no. 2): Tests of three psychics, *Randi.* Biorhythms, *Bainbridge.* Plant perception, *Kmetz.* Anthropology beyond the fringe, *Cole.* NASA and UFOs, *Klass.* A second Einstein ESP letter, *Gardner.*

FALL/WINTER 1977 (vol. 2, no. 1): Von Däniken, *Story,* The Bermuda Triangle, *Kusche.* Pseudoscience at Science Digest, *Oberg and Sheaffer.* Einstein and ESP, *Gardner.* N-rays and UFOs, *Klass.* Secrets of the psychics, *Rawlins.*

SPRING/SUMMER 1977 (vol. 1, no. 2): Uri Geller, *Marks and Kammann.* Cold reading, *Hyman.* Transcendental Meditation, *Woodrum.* A statistical test of astrology, *McGervey.* Cattle mutilations, *Stewart.*

FALL/WINTER 1976 (vol. 1, no. 1): Dianetics, *Wallis.* Psychics and clairvoyance, *Fine.* "Objections to Astrology," *Westrum.* Astronomers and astrophysicists as astrology critics, *Kurtz and Nisbet.* Biorhythms and sports, *Fix.* Von Däniken's chariots, *Omohundro.*

Letters to the Editor

Commonsense skepticism

Congratulations to John Aach on his excellent article "Science and Commonsense Skepticism" (*SI*, Fall 1991)! It is all too easy to forget that careful debunking of the paranormal will not impress people who believe that the scientific method cannot be applied to these phenomena. Unless skeptics can convince the public that these claims can and should be investigated scientifically, pseudoscientific rubbish is bound to proliferate. I hope that your readers will take Aach's suggestions to heart and put them into practice as often as possible.

Jeremy C. Henty
Cambridge, England

John Aach's article made me a little uneasy. While common sense can be used for debunking, it is also what supports the occult, which uses common sense's many fallacies against science and reason. I keep running across examples of this. For one thing, common sense believes the first explanation that comes to mind. *Foucault's Pendulum*, which you reviewed in the same issue, showed this in spades. There, a mysterious retired colonel provides a list that, he claims, reveals a vast Templar plot. Most of the book's characters are convinced—and I was too. The list contained many blanks, and a Templar plot could fill them in. On the other hand, the protagonist's girlfriend points out that a Medieval laundry list could fill them in too.

In addition, ignorant of probability theory, common sense grasps at "improbabilities" that may be bound to happen. It finds too much of a coincidence in Nostradamus's using the word "Hister" and there being a "Hitler." Skeptics can talk all they want about how the Hister was the lower Danube. Or how about the fortune-teller who predicted a friend of mine would be living in a highrise apartment within three years? And she was. Common sense finds that also too much of a coincidence. Of course there is no telling the true probability, or improbability, in either case.

Richard A. Dengrove
Alexandria, Va.

Beauty of an illusion

In the article "Spook Hill: Angular Illusion" (*SI*, Fall 1991), Guss Wilder described the phenomenon as "just an illusion, nothing more." This is more than "just an illusion," it's a real beauty! The effect can be clearly seen even in the small black-and-white photograph that accompanied the article. [See photo on following page.]

What is it about this scene that lets it "fool the eye" so well? As Wilder suggests, some elements in the scene provide visual cues that are misinterpreted by the viewer's normal, unconscious visual information processing. The brain is somehow misled into "leaping to a wrong conclusion" about the slope of the road. Interested readers might try covering up parts of the photograph to see if they can identify particular parts that, when removed, decrease the illusion.

I have no definite theory to offer to explain how the illusion "works." I would point out that since the effect is seen in the photograph no matter how you hold your head, the vestibular system of the inner ear (the "sense of

balance") probably plays a negligible role in this illusion. I think the Spook Hill illusion is a good example of how psychologists find visual illusions valuable not so much because they are so well understood as because they may be so revealing of the complexities of human perception.

One of the few books that discuss the type of visual illusion illustrated by Spook Hill as well as many other perceptual illusions that might be encountered "outdoors" is *Behavior and Perception in Strange Environments*, by Helen E. Ross (New York: Basic Books, 1975). Ross notes that the Spook Hill type illusion may also be experienced on a golf course where a green is situated on a fairly steep slope. The eye may be so completely fooled that the golfer is tricked into believing that uphill is really down, leading to a disastrous miscue!

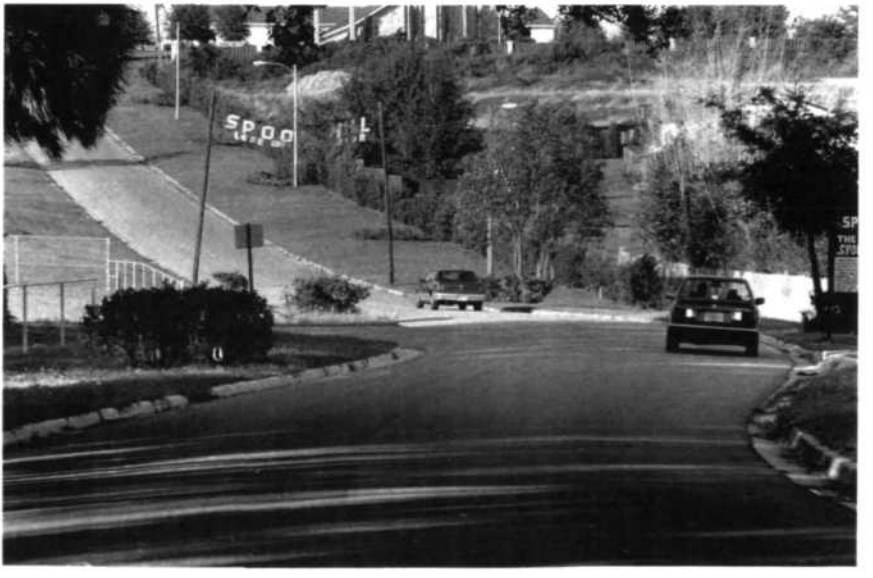
Personally, I am a little surprised that this trick has not been used by landscape architects to create the sensational effect of a "stream that flows uphill." Maybe the illusion is difficult to achieve with water.

Robert E. McGrath
Urbana, Ill.

Not far from Moncton, New Brunswick, Canada, is a tourist attraction dubbed "Magnetic Hill." It behaves exactly like Spook Hill. I visited it quite a few years ago, but I presume it is still there. However, the proprietors of an adjacent souvenir sign provide anyone interested with the opportunity to figure out exactly what is going on. If I recall correctly, they had a surveyor's level set up so you could see what the slopes really are. They also invited you to watch water in the ditch apparently flowing merrily uphill and to drive to the top of the hill, where it was easy to see that what looks like this

from point A, really looks like this

from point B.



From this approach, the eye is led to believe the road goes slightly downhill. (Photo by Guss Wilder)

The basis of the illusion is that the whole countryside slopes toward the sea several miles away.

When I was there, at least, the proprietors of the souvenir stand were doing fine just publicizing the phenomenon as the amusing and spectacular optical illusion it is, or they would give you the magnetic gobbledygook if you preferred.

Robert F. Acker
Salem, S.C.

Afrocentric pseudoscience

There is a far more sinister aspect of the *African-American Baseline Essay* than any discussed in Bernard Ortiz de Montellano's splendid article "Multicultural Pseudoscience" (*SI*, Fall 1991); perhaps he has deliberately left this rather obvious final deduction for the readers to make, but it bears saying straight out, even so.

If this "baseline" is allowed to remain and spread to other school systems, a great many black students of a scientific bent will be siphoned into this Egyptian mysticism. When they grow up, they may form an organized body of this kind of "scientist," who will look upon attacks against their pseudoscience as the ravings of racial bigots, rather than the proper reproof of informed scientists, and persuade society at large to do the same.

Suspicious indeed is the fact that Hunter Haviland Adams has chosen the most racially sensitive subculture to do this to.

Griff Ruby
Lompoc, Calif.

Lucian and Hippolytus

Walter F. Rowe's "Lucian and Alexander" (*SI*, Fall 1991) is beautifully written and fascinating. It shows what can be done with material that is otherwise buried among the philologists. But Rowe is in error in suggesting that Lucian borrowed from Hippolytus, for Hippolytus's *Refutation* was not written until 30 or 40 years after Lucian's probable death date.

Everett F. Bleiler
Interlaken, N.Y.

The Kreskin controversy

In 1966, when I was 11, I saw Kreskin on a talk show pimping a game based on the "science" of extrasensory perception. (See "1991 CSICOP Conference," *SI*, Fall 1991, p. 4.) He did some card-trick "experiments," and I was astounded (hey, I was 11). This appearance probably included a half-assed disclaimer, his usual letter-not-the-spirit "truth" that kinda says it's not *really* extrasensory, but I didn't know he was doing tricks. He deliberately misled me.

I cringe at the memory of begging my parents to buy me the overpriced "Advanced Fine Edition" of "Kreskin ESP." For their hard-earned money, I got a pendulum (with cards marked "Finance," "Travel," "Career," and "Love"—this is science?), a board, some ESP cards, and a pamphlet—all junk. The pendulum moved (this has been covered in *SI*) and the other stuff just didn't work. My parents sat with me many evenings and we tried to get some results. We were wasting our time.

After several weeks of disappointing "experiments," I stumbled across a book on "mentalism" (I think it was by Dunninger) and realized Kreskin had duped me. I felt humiliated and betrayed. It wasn't until I was 18 that Teller, James Randi, and Martin Gardner restored my love of science. Since then, a good part of my career has been dedicated to making sure others are not bilked by the likes of Kreskin.

Don't say that Kreskin brought me to skepticism. There are others who deserve that credit. Kreskin just stole money from my parents, and time and passion from me. I owe him no thanks.

I don't care if Kreskin was invited to speak at the CSICOP meetings as an "expert" on hypnotism or because of his

"charisma." If Kreskin does not answer for his "mentalism," I will find another outlet for my skepticism.

I made a promise to an 11-year-old boy.

Penn Jillette
Penn & Teller
New York, N.Y.

NDE physiology

Thanks for your article on near-death experiences and related neurophysiology by Susan Blackmore (*SI*, Fall 1991). It seems to me that as "mysterious" experiences are shared they become grounded in common experience, which then stimulates critical inquiry. I would like to share a related phenomenon that may result from a neurological mechanism called postural atonia.

It usually occurs (for me) toward the end of a daytime nap and consists of a period during which I feel reasonably aware of my acoustical and visual surroundings, but cannot lift my head, arms or shoulders despite great effort. The episode seems to last about a minute and and only occurs if I'm lying on my back.

As the experience has become more familiar, I recognize it after the initial attempt to lift. A usual scenario follows that involves "playing" with the effect by attempting to lift head, limb, or shoulder. Then, growing weary or anxious, I seriously attempt to roll over or get up. The episode eventually ends with an abrupt lurch and a fully awake stake.

Many people to whom I relate the phenomenon are familiar with it. I have read that postural atonia is the neurological mechanism responsible for inhibiting gross skeletal movement in cats during REM sleep. It seems possible that the effect arises when postural atonia remains active after REM sleep ends.

David Birch
Vienna, Va.

Depersonalization and OBEs

In the Fall 1991 *SI*, Eugene Emery reports on recent findings on transcendental meditation and depersonalization. However, he begins with a completely false definition of depersonalization. It is not "the well-known psychological phenomenon that makes people feel they are observing themselves" (p. 22). If there is such a phenomenon then it is either an "out-of-body experience" (if the person seems to be observing his or her body from outside), or "autocopy" (if they seem to be observing a replica of themselves but from their normal position).

Out-of-body experiences (OBEs) usually seem extremely real to the person, and there is often a sense of enhanced clarity of perception, thinking, and experience of self. OBEs can form part of a near-death experience and NDEs are also usually described as extremely real and vivid. By contrast, personalization involves feelings of unreality. To quote the *Oxford Companion to the Mind* (Gregory 1987), depersonalization is "a complaint made by a patient that he feels himself to be changed, that the world appears different or unreal because he is different. If the world is seen as if in a dream, vague or unreal or, though familiar, as having no reference or significance to him, the state is called derealization."

Although such states can occasionally be accompanied by OBEs or autoscopy and can occur during NDEs, they are not equivalent to them. It is important to keep these definitions clear in trying to understand just what changes meditation does bring about.

S. J. Blackmore
Bristol, England

(Dr. Blackmore wrote the article on NDEs in our Fall 1991 issue.—ED.)

Eugene Emery responds:

For what it's worth, the Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R), *published by the American*

Psychiatric Association, says depersonalization disorder is manifested in some cases "by a feeling of detachment from and being an outside oberver of one's mental processes or body." The DSM *index makes no reference to out-of-body experiences or autoscopy.*

Foucault's Pendulum

Thank goodness I had already read Umberto Eco's *Foucault's Pendulum* before I read Erik Strommen's review of it in the Fall 1991 *SI*. In fact, this wasn't a *review* of the book at all—it was a *synopsis*. And what's worse, it gave away the twists of the plot, and the ending. *Foucault's Pendulum* is a superb book, and I'm glad that Strommen enjoyed it, but I'm afraid that he will have spoiled many of its surprises for first-time readers.

Toby Howard
Manchester, England

I am heartened by your inclusion, at long last, of an excellent review of Umberto Eco's astonishing *Foucault's Pendulum*. It had seemed to me the best antidote for the epidemic of pseudoscience afflicting us.

Congratulations to Erik Strommen for his succinct but comprehensive analysis of the work.

The tragedy is that the people who need to read and understand the work are just the ones who won't touch it with a 10-foot pole.

Your magazine does much good service in the cause of reason and sanity in a world much troubled by muddled thinking.

Charles R. Ayer
Framingham, Mass.

Although I agreed with much of Eric Strommen's assessment of Umberto Eco's book, the review was spoiled to some degree by the presence of several factual errors: the different Templar groups are scheduled to meet every 120 years, not 16 as stated; it is not Lia who takes part in an occult rite in Brazil, but one of Causabon's earlier girlfriends—Amparo; the character referred to in the review as the "Comte St. Germaine's" is actually called Aglie, and it is only intimated (never openly stated) that he is an incarnation of the reputedly immortal Comte.

Jonathan Ainsworth
Lancaster, England

Stamp of pseudoscience

I appreciated the articles in your Fall 1991 issue, especially Robert Sheaffer's Psychic Vibrations, "The Stamp of Pseudoscience, the Army of Saucerers."

The fact that a West African nation, Sierra Leone, issues a stamp illustrating the "face" on Mars does not automatically make them practitioners of pseudoscience. While the stamp may be worth $135 to me as one of the original authors of discovery of the "face" (*Unusual Martian Surface Features*, 1980), it probably would not be a wise investment.

I think it would make a great follow-up article to print the "philatelic code of ethics" it allegedly violates. The face on Mars is there, just as is Olympus Mons. To commemorate the Viking Orbiter's image of the "face" is no more pseudoscience than any other satellite photograph.

If Feinstein Associates claimed the stamp (or the face) was proof of a civilized habitation of Mars, or that there were little green men running around the surface, perhaps that would be pseudoscience.

Personally, I like the stamp. I think it promotes science. If one has no proof of its representing more than a geological feature, that is fine with me. If someone offers a logical hypothesis of its being created by a civilization, I would listen to their scientific evidence.

Greg Molenaar
Willmar, Minn.

Robert Sheaffer replies:

True, one's putting the "face" on Mars on a stamp does not automatically make one a "practitioner" of pseudoscience. But it does *make one a "promoter" of same: it's a subtle distinction. I am not versed in the philatelic "code of ethics," but any professional stamp dealer should be able to explain how the "face on Mars" stamp ran afoul of it.*

Actually, Greg Molenaar may no longer be on the leading edge of discovering "unusual Martian surface features." Cryptozoologist Jon Eric Beckjord has discovered a number of additional faces there, including those of Ted Kennedy and, most recently, Saddam Hussein. Discovering images in more or less random patterns of rocks isn't terribly difficult. What's difficult is keeping one's imagination in check.

The Ha! test

By the time the latest Roswell rumor (Psychic Vibrations, *SI*, Fall 1991) got to us in the hinterlands, it included a curious piece of pseudo-history: that the Rockefellers and the Rothschilds were responsible for the coverup to hide the knowledge of how to save the world, which they had received from the aliens, from the rest of the world. I applied to this a version of your commonsense test (same issue), which I have long called the Ha! test: Upon initial reflection concerning claims of the paranormal, how big a belly laugh does it generate?

I'm sorry, this kind of stuff really isn't funny, but every once in a while, the absurdity demands a Ha!

David M. Shoe
Denver, Colo.

Jahn's statistics again

John P. Wendell's recent Follow-up article ("More on Jahn's Statistics," *SI*, Fall 1991: 89-90) attempted to adjust the statistical probability associated with a controlled micropsychokinesis (MPK) experiment, as given by Jahn in his letter to *SI* in the Spring 1989 issue. In doing so, Wendell rejected the statistical methods used by Jahn, which were rooted in the traditional frequentist school of statistical theory, for those of the Bayesian school. Unfortunately, he has done justice to neither.

To summarize the problem, a success rate of 0.5002 was observed in 78 million trials with a purportedly equally likely dichotomous outcome. Hence 39 million successes would be expected. The central question is: How unusual a result is the *observed* number of successes, 39,015,600, and what does this say about the evidence for MPK?

Wendell rejects Jahn's report that "the statistical likelihood of this occurring by chance is 2×10^{-4}" for two reasons. The first is that a two-sided test should have been used instead of a one-sided test, which would double the probability to 4×10^{-4}. While this is perhaps correct, the *p*-value remains small. The second reason, that "it is simply not true that the *p*-value is a measure of evidence against the null hypothesis," is itself simply not true. I suspect that Wendell is confused by the difference between the terms *evidence* and *probability*. While it is true that *p*-values cannot be directly interpreted as the probability of a hypothesis, even the most devout followers of the Bayesian paradigm would agree that a very small *p*-value usually gives at least some evidence against the null hypothesis. Further, Wendell compares his posterior probability, 0.052, to the 0.0002 *p*-value, and concludes that they differ "by an order of at least two magnitudes." Since *p*-values and posterior probabilities have different interpretations, it does not make sense to compare them in this way.

The subsequent calculations, while true to the form of a Bayesian analysis, are not fully in the spirit of the paradigm. In fact, many Bayesians would outright reject the idea of testing a point-null hypothesis in the first place (see, for example, James O. Berger, *Statistical Decision Theory and Bayesian Analysis*, 2nd ed., Springer-Verlag, 1985, p. 20). The main objection here is that point-null hypotheses are almost never exactly correct. For example, a supposedly "fair"

coin may have true probability of heads of 0.500001, so that a large enough number of trials would be certain to reject the hypothesis that *Pr[Heads]* = ½ exactly. One must, in any given experiment, decide in advance upon a criterion for a meaningful difference, and test for the presence of such a difference.

In the present case, a more thoughtful analysis would first require agreement on what constitutes a large enough deviance, say *d*, from ½ to be a meaningful MPK effect (it could be very small), and then test the composite null hypothesis that the true value is in the range (½ - *d*, ½ + *d*.) Of course one must also ensure, as Wendell suggests, that this deviance is sufficiently larger than the error induced by deficiencies present in any real-world experimental design, or the entire exercise becomes pointless. As Jahn's experiment apparently failed in this respect, the results are inconclusive at best.

Lawrence Joseph
Montreal, Quebec
Canada

John P. Wendell replies:

Lawrence Joseph questions my statement that p-*values are not a measure of evidence against the null hypothesis with an unsupported assertion about the beliefs of "devout" Bayesians. His argument does nothing to counter my assertion that Jahn's* p-*value cannot be considered a measure of evidence against the null hypothesis because it is the sum of 38,984,400 probabilities, 38,983,999 of which have nothing to do with the observed experimental result. If Joseph thinks the probabilities of unobserved events constitute evidence, it is he, and not I, who is confused about the difference between* evidence *and* probability. *If it is unfair of me to compare my posterior probability of 0.052 with Jahn's* p-*value of 0.0002, I remind Joseph that it was Jahn who invited the comparison by claiming that his* p-*value is a measure of statistical likelihood. On page 20 of* Statistical Theory and Bayesian Analysis, *Berger objects to classical significance tests (*p-*values) of a point null and not to Bayesian tests of a point null as Joseph implies. If Joseph had read on to page 21, he would have noticed that Berger says, "There are certain situations in which it is reasonable to formulate the problem as a test of a point null. . . ." Later (p. 149), Berger indicates that the hypothesis that there is no ESP is one of those situations. Certainly MPK is not different from ESP in this regard. Joseph's assertion that a thoughtful analysis of MPK data must begin with agreement on what constitutes a meaningful MPK effect misses the point. No level of MPK can be considered meaningless because the existence of any level of MPK, by definition, cannot be explained by any known physical mechanisms; therefore, we cannot and never will, as Joseph proposes, agree on a minimum level that a real MPK effect must reach to be considered meaningful.*

Steiner's other activities

Interesting that two items about Rudolf Steiner's followers appeared in the Fall 1991 *SI* News and Comment. The column about the biodynamic possum repellent didn't mention that Biodynamic Agriculture is, like Waldorf schools, one of the activities of Steiner's Anthroposophy.

For the record, Steiner's "spiritual science" establishment includes:

Anthroposophical Medicine
The Anthroposophical Society
Biodynamic Agriculture
Camphill Schools (Villages, Communities)
The Christian Community
Waldorf Schools

Dan Dugan
San Francisco, Calif.

Joke, but on whom

Hard to believe, but I guess being skeptical doesn't necessarily mean having good sense. The chain letter that "weighs heavily on top journalists" (News and Comment, *SI*, Fall 1991) was

a put-on circulating at such a respected level of the profession that anyone who received it was flattered to be included in the group. Why do you think everybody left on everybody else's comments? C. Eugene Emery, Jr., evidently missed the joke, and taking him seriously doesn't say much for *SI*.

William J. Helmer
Chicago, Ill.

Gene Emery replies:

I lack the clairvoyance needed to contend that my colleagues never took the chain letter seriously. But when someone makes a good-natured admission that they are superstitious, I see no reason to doubt such a confession.

I view writing a note as a polite, civilized, and entertaining way of passing on a chain letter, not evidence that everyone thought it was a joke.

Actually, even in cases where people said they were simply sending the letter along as a lark, I have to wonder if some were motivated, at least in part, by an unwillingness to court bad luck. I was given packets by several colleagues. I got them because they weren't superstitious enough to perpetuate the chain. But some couldn't bring themselves to trash their packets either.

Will my failure to pass on all these chain letters make me explode with accumulated bad luck? Of course not (knock on wood)!

Animal rights movement

I am not a member of the animal-rights movement in any meaningful sense, but I am irritated with Robert Rutman's dismissal of it as the product of mere illogic (Letters, Fall 1991). The animal-rights movement is making a *moral* challenge to experimentation on animals, eating the flesh of animals, and so on. They say these things are bad to do. Rutman apparently believes they are all right to do. But this type of conflict cannot be resolved by "rigorous intellectual practices," as Rutman says, and the fact that animal-rights advocates are in conflict with Rutman on this issue of moral values does not mean that they are stupid, ignorant, or mystical.

Peter Kimball
American College of Healthcare Executives
Chicago, Ill.

Robert Rutman's arguments show little application of the rigorous intellectual practices he claims to uphold. Wild assertions are put forward without evidence. Animal-rights supporters think scientists are "creatures of the devil"? Animal rights people would allow mankind to be attacked by "plagues, epidemics, and famines beyond control"? These comments are not just emotional; they are silly.

Moreover, Rutman misses the key point. He would like us to think that animal rights is a pseudoscience, but animal rights is primarily a moral argument. It is based on the ethical conclusion that sentient nonhuman animals have the right to be treated with respect. This is no more a claim of the paranormal than is the concept of human rights.

Larry Kaiser
Dexter, Mich.

As a concerned animal rightist, I was disturbed by Robert Rutman's letter. I feel it is necessary to bring up several points.

First, there are many different kinds of animal rightists, with differing views concerning animal experimentation. The behavior and beliefs of animal rightists as a group should not be judged by the behavior and beliefs of a handful of extremists.

Second, what the animal rights movement used to be has little or nothing to do with what it is now. What is important is not its past history, but its present performance.

Third, even those animal rightists who wish to eliminate all animal experimentation are not necessarily against

all science.

Fourth, most animal rightists, while not Rutherfords or Mendels, are reasonably well informed concerning science and its methodology.

Fifth, it is perfectly possible to maintain animal experimentation *while eliminating unnecessary pain and suffering for the animals concerned.* This is the goal of most animal rightists today.

Lorrill Buyens
Phoenix, Ariz.

(We received numerous other letters making these same points.—ED.)

Gardner on Urantia

I wish to apologize for many careless errors in my column about the Urantia movement (*SI*, Winter 1990), most of them called to my attention by Philip Calabrese, a San Diego mathematician, and by Julio Edwards, of Denver. I have learned a great deal about the *Urantia Book (UB)* since I wrote that column.

1. I said the *UB* purports to be the work of extraterrestrials. Actually, the *UB* says that some of its papers were written by superhumans living on earth but invisible.

2. I said human souls were created at birth. The *UB* says that the soul begins to develop, on an average, at about age 6.

3. I said Jesus did not turn water into wine. Although true, the water *did* turn to wine, but it was done by higher powers who "abrogated" time and caused the change by natural laws.

4. I called Michael an archangel, as he is called in the Bible. In the *UB* he is a Creator Son who was incarnated on earth as Jesus. I assumed that Lucifer was a fallen angel, as depicted in the Bible, but in the *UB* he is the deposed sovereign of a star system known as Satania. Satan was his first lieutenant. Satan, Beelzebub, and Caligastia are also not angels in the *UB*.

5. I said Jesus (Michael) was part of the "ultimate trinity." I should have said the "absolute trinity."

6. I mispelled Gonod, Grandfada, and agondonters.

7. Although Adam and Eve disobeyed God, according to the *UB* it was not by eating a forbidden fruit. The *UB* considers this a Genesis myth.

8. I said Lucifer was imprisoned "on" Satania, when I should have said "in." And when I said Adam and Eve are now "in" Jerusem, I should have said "on."

I am now writing a book about the Urantia movement, and would welcome hearing from anyone formerly associated with this new revelation who may have information about the *UB*'s origin. I would also be pleased to hear from anyone personally acquainted with the Chicago psychiatrist Dr. William S. Sadler, who published the *UB* and was the movement's leading promoter.

Martin Gardner
110 Glenbrook Dr.
Hendersonville, N.C. 28739

High fidelity consumption

If you have room for one more comment on "Hi-Fi Audio Pseudoscience," by Fred E. Davis (*SI*, Spring 1991, and Follow-up, Fall 1991), I believe I have an amusing contribution. A friend of mine was a helicopter pilot in Vietnam. In case anyone doesn't know, this is an extremely noisy environment. Some time after he returned to the United States, he underwent a standard physical, including a hearing test. As he reviewed the results of the exam with the doctor, my friend was startled by the doctor's question, "How much did you pay for your stereo system?" My friend responded, "About $800. Why?" The doctor replied, "Well you're hearing about $400 worth." I have often wondered since whether the more expensive audio equipment is more the exercise of conspicuous consumption than the pursuit of high fidelity.

Robert Wivagg
Bethany, Conn.

A CSICOP SEMINAR

The Skeptic's Toolbox

University of Oregon at Eugene
Thursday-Monday, August 20-24

The workshop will begin with dinner and an introduction on Thursday night, August 20, and will adjourn at noon on Monday. Our goal is to sharpen the ability of skeptics to deal with various situations. Some of the topics to be covered by the five lecturers are:

The Brain and Psychic Experience
How Our Minds Can Deceive Us
How Children Succeed in Fooling Adults
The Statistics of Coincidences
The Dowsing Rod and the Ouija Board
How to Avoid Legal Pitfalls
Pitfalls in Psychical Research
How to Deal with the Media and Confrontational Challenges
How to Convince Strangers You Are Psychic
How to Distinguish Good from Corrupt Information

Ray Hyman, the workshop coordinator, is a professor of psychology at the University of Oregon and a member of the CSICOP Executive Council. He has written extensively on the critical evaluation of paranormal claims. With a background in professional magic, he specializes in the psychology of human error and deception.

Barry Beyerstein, professor of psychology at Simon Fraser University, Vancouver, B.C., and a member of the CSICOP Executive Council, specializes in how the brain determines behavior. He has researched how apparently psychic experiences can be due to malfunctions in the brain.

Loren Pankratz, a clinical psychologist with the Veterans Administration in Portland, Oregon, is the world's foremost authority on the Munchausen Syndrome, which refers to patients who repeatedly and successfully fake serious illnesses. He has studied quackery in all its guises, and is a magician who writes on the psychology of conjuring.

Jeff Mayhew, whose degree is in physics, has pioneered in applying computer graphics and the latest audiovisual tools to foster skepticism. He will demonstrate how to target audiences and how to deliver your message most effectively.

Jerry Andrus, magician, inventor, and iconoclast, has lectured at Harvard, MIT, the University of Oregon, and elsewhere on how people reach the wrong conclusions for the "right" reasons. He has created many optical illusions and is a consultant to major science museums.

Take advantage of this exciting opportunity to sharpen your skeptical skills, and join us on the Sunday fieldtrip to the "Oregon Vortex," one of Oregon's major "paranormal" geographical sites.

For registration information, contact Barry Karr, CSICOP, P.O Box 703, Buffalo, NY 14226-0703, or call him at 716-636-1425.

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The organizations listed below have aims similar to those of CSICOP but are independent and autonomous. They are not affiliated with CSICOP, and representatives of these organizations cannot speak on behalf of CSICOP.

UNITED STATES

ALABAMA. Alabama Skeptics, Emory Kimbrough, 3550 Watermelon Road, Apt. 29A, Northport, AL 35476 (205-759-2624).

ARIZONA. Tucson Skeptical Society (TUSKS), James McGaha, Chairman, 2509 N. Campbell Ave., Suite #16, Tucson, AZ 85719. **Phoenix Skeptics,** Michael Stackpole, Chairman, P.O. Box 60333, Phoenix, AZ 85028.

CALIFORNIA. Bay Area Skeptics, Wilma Russell, Secretary, 17723 Buti Park Court, Castro Valley, CA 94546. **East Bay Skeptics Society,** Daniel Sabsay, President, P.O. Box 20989, Oakland, CA 94620 (415-420-0702). **Sacramento Skeptics Society,** Terry Sandbek, 3838 Watt Ave., Suite C303, Sacramento, CA 95821-2664 (916-488-3772).

COLORADO and WYOMING. Rocky Mountain Skeptics, Béla Scheiber, President, P.O. Box 7277, Boulder, CO 80306.

DISTRICT OF COLUMBIA, DELAWARE, MARYLAND, and VIRGINIA. National Capital Area Skeptics, c/o D. W. "Chip" Denman, 8006 Valley Street, Silver Spring, MD 20910.

FLORIDA. Tampa Bay Skeptics, Gary Posner, 6219 Palma Blvd., #210, St. Petersburg, FL 33715 (813-867-3533).

GEORGIA. Georgia Skeptics, Anson Kennedy, Secretary, P.O. Box 654, Norcross, GA 30091.

ILLINOIS. Midwest Committee for Rational Inquiry, Lawrence Kitsch, President, P.O. Box 2792, Des Plaines, IL 60017-2792.

INDIANA. Indiana Skeptics, Robert Craig, Chairperson, 5401 Hedgerow Drive, Indianapolis, IN 46226.

KENTUCKY. Kentucky Assn. of Science Educators and Skeptics (KASES), Chairman, Prof. Robert A. Baker, 3495 Castleton Way North, Lexington, KY 40502.

LOUISIANA. Baton Rouge Proponents of Rational Inquiry and Scientific Methods (BR-PRISM), Henry Murry, Chairman, P.O. Box 15594, Baton Rouge, LA 70895.

MICHIGAN. Great Lakes Skeptics, Carol Lynn, contact, 1264 Bedford Rd., Grosse Pointe Park, MI 84230-1116.

MINNESOTA. Minnesota Skeptics, Robert W. McCoy, 549 Turnpike Rd., Golden Valley, MN 55416. **St. Kloud ESP Teaching Investigation Committee** (SKEPTIC), Jerry Mertens, Coordinator, Psychology Dept., St. Cloud State Univ., St. Cloud, MN 56301.

MISSOURI. Kansas City Committee for Skeptical Inquiry, Verle Muhrer, Chairman, 2658 East 7th, Kansas City, MO 64124. **Gateway Skeptics,** Chairperson, Steve Best, 6943 Amherst Ave., University City, MO 63130.

NEW MEXICO. New Mexicans for Science & Reason, John Geohegan, Chairman, 450 Montclaire SE, Albuquerque, NM 87108; John Smallwood, 320 Artist Road, Santa Fe, NM 87501 (505-988-2800).

NEW YORK. Finger Lakes Association for Critical Thought, Ken McCarthy, 107 Williams St., Groton, NY 13073. **New York Area Skeptics** (NYASk), William Wade, contact person, 97 Fort Hill Road, Huntington, NY 11743-2205. **Western New York Skeptics,** Tim Madigan, Chairman, 3159 Bailey Ave., Buffalo, NY 14215.

NORTH CAROLINA. N.C. Skeptics, Michael J. Marshall, Pres., 3318 Colony Dr., Jamestown, NC 27282.

OHIO. South Shore Skeptics, Page Stephens, 6006 Fir Avenue, Cleveland, OH 44102 (216-631-5987). **Association for Rational Thinking** (Cincinnati area), Joseph F. Gastright, Contact, 111 Wallace Ave., Covington, KY 41014, (513) 369-4872 or (606) 581-7315.

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WASHINGTON. The Society for Sensible

(continued on next page)

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Summer Session 1992 — Sat.-Wed., June 13-17
at the State University of New York at Buffalo

The Institute for Inquiry is jointly supported by CSICOP and CODESH, two scientific and educational nonprofit organizations. The Institute offers courses and curricula to develop knowledge and appreciation of skepticism, rationalism, free thought, and scientific modes of inquiry. The Summer Session will offer three courses: Health Controversies (CSICOP), Critical Thinking (CSICOP and CODESH), and Bioethics (CODESH). Participants can register for one course ($125), two courses ($225), or three courses ($300). Accommodations, meals, and textbooks are not included.

Saturday, June 13

7:00-10:00 P.M.: Reception

Hosted by Vern Bullough, Dean of the Institute for Inquiry, and Distinguished Professor, State University of New York

Sunday, June 14

9:00 A.M.-12:00 NOON: Bioethics

Paul Kurtz, professor emeritus of philosophy, SUNY at Buffalo
Marvin Kohl, professor of philosophy, State University of New York College at Fredonia

12 NOON-1:00 P.M.: Luncheon Break

1:00-4:00 P.M.: Critical Thinking

Lee Nisbet, professor of philosophy, Medaille College
Tad S. Clements, professor emeritus of philosophy, SUNY College at Brockport

4:30-7:30 P.M.: Health Controversies

Stephen Barrett, M.D., editor of *Nutrition Forum* newsletter

7:30-10:00 P.M.: Dinner and Open Forum

Monday, June 15

Courses continue; repeat of Sunday schedule.

Tuesday, June 16

Courses continue; repeat of Sunday schedule.

Wednesday, June 17

9:00A.M.-2 P.M.: Trip to Niagara Falls (optional)

3:00-4:30 P.M.: Bioethics

4:30-6:00 P.M.: Critical Thinking

6:00-7:30 P.M.: Health Controversies

7:30-10:00 P.M.: Farewell Dinner and entertainment

For registration form and accommodations information, contact Barry Karr, CSICOP, Box 703, Buffalo, NY 14226-0703, 716-636-1425.

The Committee for the Scientific Investigation of Claims of the Paranormal

The Committee for the Scientific Investigation of Claims of the Paranormal attempts to encourage the critical investigation of paranormal and fringe-science claims from a responsible, scientific point of view and to disseminate factual information about the results of such inquiries to the scientific community and the public. It also encourages critical thinking, an appreciation of science, and the use of reason in examining important issues. To carry out these objectives the Committee:

- Maintains a network of people interested in critically examining paranormal, fringe-science, and other claims, and in contributing to consumer education.
- Prepares bibliographies of published materials that carefully examine such claims.
- Encourages and commissions research by objective and impartial inquiry in areas where it is needed.
- Convenes conferences and meetings.
- Publishes articles, monographs, and books that examine claims of the paranormal.
- Does not reject claims on a priori grounds, antecedent to inquiry, but rather examines them objectively and carefully.

The Committee is a nonprofit scientific and educational organization. The SKEPTICAL INQUIRER is its official journal.